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REMARKS

ON ELECTRICITY, &c.

TO HIS

Royal Highness Prince

LEOPOLD, of SAXE COBURG,

&c. &c.

May it please your Royal Highness.

As you have condescended to permit this work to be ushered into the World under the auspices of your illustrious name—it affords me a fair opportunity of expressing my highest respect and esteem for Your Royal Highness's acknowledged character. It is to be lamented, that exalted rank and splendid fortune, have sometimes been the inheritance of the weak and the worthless; but when these prepossessing distinctions are united

with an enlightened mind and a benevolent heart, their possessor deservedly becomes the admiration of the wise and the good, and his bright example is a most powerful incentive to the intellectual and moral improvement, of the age which his life adorns.

Your Royal Highness, by your amiable disposition, unassuming manners, and by your exemplary observance of every sacred duty, has had the rare felicity of not only subduing all national prepossessions, but of uniting all voices and all hearts in your favour.

This little Work has for its primary objects, the cure of some diseases, and the alleviation of others,

for which the means here suggested have been proved by my own experience, to be fully adequate to the ends proposed.

As health is the great charm which so much contributes to human enjoyments, this treatise cannot be more properly dedicated than to your Royal Highness, who has shown from the tenour of your life, that the happiness of others, is one of the chief sources of your own.

I am, With every Sentiment
of Esteem and Veneration,
Your Royal Highness's
Most grateful, obedient,
and devoted Servant,

JAN. 1. 1820. *M. La Beaume.*

ANALYTICAL

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TION, about the year 1600. The great BOYLE pointed out RECIPROCAL ATTRACTION, and LIGHT, as properties belonging to Electricity. In 1630, OTTO GUERICKE a Prussian Naturalist, discovered a REPELLING PROPERTY in the ELECTRIC FLUID—also found SOUND to be another singular property in *Electricity*. The immortal NEWTON, added his contribution of discoveries, and among the rest—that of NEGATIVE ELECTRICITY - - 31 - 34

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PREFACE

TO THE SECOND EDITION.

THE man who has the merit of discovering a remedy, better adapted to stay the ravages of disease and diminish the list of human maladies, than any hitherto known in medical practice, is much more entitled to the reward of a civic crown, than the Roman who saved the life of a fellow citizen. The exertions of the latter, were no doubt in the highest degree laudable, and well deserved the honours awarded to their performance; but individual instances of heroic virtue, however meritorious, wane

into insignificance, when compared with those benevolent labours, which are pursued for the benefit of the whole human race.

It is a melancholy truth, too well attested by historical vouchers, and is indeed but a poor compliment to the morality of man and nations—that improvement in the science of military destruction, has been as remarkable for rapidity of progress, as beneficial advances in the healing art, have been for slowness of growth. The cause of this disproportionate march of knowledge in these opposite pursuits, may in part be found in the more alluring rewards that repay eminence in the one, than are awarded to proficiency, however distinguished, in the other. Let the reader, who is guided in his opinions on human action, by the unadulterated feelings of nature, mellowed and refined by christian

sympathy, contrast the rewards of a HOWARD and a JENNER—the one, who explored the haunts of human wretchedness only to relieve, and the other, who stopped the course of pestilential infection—with the splendid honours heaped on military Chiefs for laying kingdoms desolate, and his heart will sink within him, with mingled emotions of grief and pity.

But it is also to be regretted, that the rewards and the honours, such as they are, usually paid to distinguished Masters in the healing art, have been too often claimed by and granted to busy, bold impostors, who have no other pretensions to merit, than noisy clamour and ignorant assurance; and who presuming on the credulity of human weakness, contrive to riot on the profits of delusion. There is no undertaking in the affairs of this world, to which is annexed a greater degree of moral re-

sponsibility, than that connected with the health and lives of our fellow creatures. The man of feeling and conscience, before he ventures to recommend to public adoption, any new remedy for human maladies, will first call himself to a strict account. He will take care that the utility of his discovery, has been previously and completely ascertained. Even then he may be reviled by ignorance, and calumniated by envy, but in all fortunes, he will be consoled by the delightful whispers of self-approbation.

In the first edition of 'Remarks on the Medical Properties of the Air-Pump Vapour Bath,' I briefly adverted in the appendix to the utility of Electricity and Galvanism, with a view of calling the attention of the faculty and the afflicted public to that subject. In the second edition of the pamphlet just alluded to, I had in-

tended to have entered more largely into the subject, but having extended the limits of that work beyond my original design, I have thought it better to publish a small volume separately, on the history, philosophy, and medical properties of Electricity and Galvanism; accompanied with numerous facts, illustrative of my system of treatment. This is one reason for my again appearing before the public, but I had also a hope of presenting the reader with such a clear and concise view of the characteristic properties of Electricity and Galvanism, as would render them more intelligible than they will be found described in the numerous and ponderous works, which have appeared on the same subjects. But the chief object I had in view by this publication, was to do justice to the *astonishing efficacy of Galvanism*, in my own treatment of diseases of the internal organs—a purpose, to which this potent agent had

not before been applied. This most interesting truth will, in this work, be found fully established by an authentic list of enumerated cures, in the most hopeless cases of disease.

The discovery of a topical remedy in galvanic agency, has certainly been productive of great good in local affections; but its superior efficacy in chronic disorders, and those too of the vital functions, which have for ages baffled the skill of the ablest practitioners, aided as they have been by the combined powers of medical and auxiliary remedies—entitles it to hold a far higher rank than it now does in the estimation of mankind. This is not declamation—I am supported by the evidence of *innumerable facts*, when I announce to the world, that this powerful agent has proved an efficient remedy for a vast class of human maladies, originating in the de-

rangement of the *digestive organs*, and in the *nervous system*. When I contemplate the inestimable value of health, and the *variety* and *prevalence* of *chronic diseases* incident to humanity, I confess I feel a glow of internal satisfaction not to be described, that I have contributed something to assist in the cure of obstinate disorders, which though not *immediately fatal* in their effects, yet *lay the foundation* of *premature old age*, and a *lingering*, *miserable death*.

In composing the following little work, I have endeavoured to profit by that observation of Addison, where he says, 'that the essence of many folio volumes may be compressed into a twopenny pamphlet.' Under the influence of this useful truth, I have diligently perused, and carefully selected from numerous authors on the subjects of Electricity and Galvanism;

and condensed the whole, as far as I deemed consistent with perspicuity. In short, after much intense thinking, and long practice in this branch of medical science, I have here presented the candid reader with as clear and distinct a view of the history, philosophy, and medical utility of Electricity and Galvanism, as my humble abilities could accomplish. I have done this, that he may with a little attention, not only *understand* their nature and medical properties—their applicability and efficacy in those disorders which I have described, but that he should not *misunderstand* my meaning, in treating either of the philosophical, or practical parts of the subject. This is no trifling undertaking, and after all my caution, should I still appear to dwell too long on matters, which I may deem of importance to society, I hope my motives, will plead with the candid, in extenuation of the detail. Let

it be recollected, while the pages of this little work are perused, that the great and primary object which I had in view by its publication, was *utility*, and by that *test*, I ought to be judged. If I am made, by the great benefactor of mankind, *instrumental* in dispensing relief to my afflicted fellow creatures, I shall never envy the wealth or the honors, which the world can confer on the avaricious and ambitious.—

M. La Beaume,

31, *Southampton Row,*
Russell Square.

INTRODUCTION, &c.

THE science of Electricity has not attained its present perfection by any sudden discovery, or any single effort of research, but by the patient, persevering, and enlightened labours of philosophy. Even its medical powers and utility were not found out by professors of the healing art, but by a class of modern philosophers of the most benevolent cast of character—who, though the tendency of their labours could be no other than to lessen the *quantum* of human suffering, and add to the best of human enjoyments, were assailed by the malignant clamours of ignorance and prejudice, and not a little thwarted in their course by even the liberal part of the

faculty, who, by a too indiscriminate and injudicious application of medical Electricity, brought for a time discredit on its character, and retarded its progress. Various causes have indeed concurred to prevent the universal adoption of this most salutary and powerful medical remedy. Among the rest may be noticed, the ignorance of practitioners of the nature or stages of those diseases to which it is applicable—the inefficiency of the apparatus—unskilfulness in the mode of application—and even to the want of perseverance on the part of the patient. To these may be added, the reluctance evinced by some of the faculty, to resort to this remedy, while hopes remain of effecting a cure, by any other means. Yet even in these forlorn cases, the power of Electricity has been fully proved, by the extraordinary and striking cures which it has accomplished. The following extract from the last report of the London Electrical Dispensary, will establish beyond the power of contradiction, the truth of this assertion.

'It appears indeed from a careful examination of its records, that nearly as many patients are relieved and cured, in proportion to the numbers admitted, as are dismissed from other Medical Institutions where Electricity is scarcely ever employed. If the effects of other medicines, therefore, are well ascertained, the benefit of this powerful agent cannot be demonstrated upon grounds less uncertain. It is proper also to remark that many are relieved and cured at this Dispensary, who have been using medicines for weeks and months in other charities without effect; and it may be further added, that the greatest number of cases which come under care are those called *Chronic*, the cure of which is by far more tedious and difficult than the *Acute*, which in other dispensaries abound.

'*Frequently after all other means have been ineffectually administered, the afflicted object looks to this Charity as the last refuge and consolation, and thus it becomes a truly Samaritan Institution, in*

aid of every other; a pleasing confirmation of which is afforded by authentic reports, carefully registered, of recovery from diseases equally distressing and complicated. In Paralytic Affections, singular cures have been effected; and in that frequent disease of Palsy in painters, and persons in general employment in preparations of lead, it has been particularly salutary. The same happy results have been experienced in Chronic Rheumatism, in Sciatica, and many painful affections of the Joints—in Nervous Head-Aches, Dropsies, Deafness, and even in the Gutta Serena, which is too often the forerunner of Blindness.

'As the influence of Electricity on the human frame is tonic and invigorating, it is highly efficacious in most diseases arising from a weakened, exhausted, and disorganized state of the constitution, and in many delicate and painful complaints peculiar to the female sex, particularly in the young and middle-aged, and in most of that train of afflicting diseases from

Debility and Spasm, in St. Vitus's Dance, and even in that dangerous affection of the Locked Jaw, and other spasmodic and convulsive diseases.

'Patients admitted from Michaelmas, 1793, to June 4, 1819 .	8,686
Whereof have been cured	3,962
Relieved....	3,308
Discharged...	1,320
Now under cure.....	96
	8,686'

With such convincing proofs as these, of the salutary and extraordinary powers of medical Electricity brought before the public, it might be imagined that the most prejudiced, ignorant, and incredulous, would cease to be haunted with doubts and apprehensions, either of its safety in application, or of its certainty in producing a beneficial result. Patients, however, are

naturally much influenced in their choice of remedies by the opinions of the faculty; and it is to be lamented that many of the latter, for various reasons, are not over forward in recommending medical Electricity. Some few may be ignorant of its powers; and many, from the multiplicity of their other avocations, may have no leisure to study the science. Yet it is not for want of publicity being given to electrical operations, that the science remains unknown to medical practitioners; for it has long been introduced into hospitals and army practice, and has also, in the open face of day, been successfully employed by the Royal Humane Society, in the resuscitative process of restoring suspended animation. Foreign practitioners too, have long and generally applied its powers, both in medical and surgical cases, with astonishing success.

Indeed this philosophical treatment of disease has now become almost general; —eminent professors in every quarter of

Europe have of late particularly directed their attention to medical Electricity, and have even applied its powers, in many disorders on which they had never before been tried; and in England too, some scientific medical men have now introduced into their practice electrical agency.

That the intelligent reader may form a correct idea of the nature and powers of this philosophical remedy, I shall give a clear but concise history of its discovery—of its medical properties and efficacy in certain diseases—its gross abuse in others—and of its successful employment in a variety of disorders;—accompanied with a number of interesting cases, which prove to demonstration its practical utility. If all this shall be found to have been done, it will surely not be deemed too presumptuous in me to assert, that this little work well deserves the attention of the public, of the afflicted in particular, and not *less* so, of the professors of the healing art.

ELECTRICITY.

THE term Electricity is derived from the Greek word λεκτρον (amber) and the Latin word *electrum*. This name has been long applied to that *etherial fluid*, *sui-generis*, which pervades universal nature, as its *soul* and *moving power*. What its *abstract nature* and *essence* may be, cannot be fully ascertained; but it is perfectly well known, that it resides more or less in all bodies in different states, and in various modifications—that its agency is felt in *every department* of nature, throughout the animal, vegetable, and mineral kingdoms—thus possessing the delegated attribute of a *philosophical ubiquity*.

The astonishing effects which can be

distinctly traced to this *active and powerful principle*, so different from those produced by any *other subordinate agency*, have attracted and engaged the attention of the scientific and philosophical of almost every age and country. The result of these laborious researches into the singular phenomenon, have afforded to our limited faculties, no other certain conclusion, than that its *existence is universal*, and its *properties altogether extraordinary*.

Whatever importance speculative philosophy may attach to the discovery of this subtile and universal fluid, the knowledge of its *medical influence*, is infinitely more interesting to mankind, than even a perfect acquaintance with its *essence*, or its material substance.

The discovery of Electricity is of *great antiquity*. THALES, the chief of the seven sages of Greece, according to ancient history, detected the existence of this subtile fluid, about six hundred years before the

Christian era. He was the first who observed ATTRACTION to be its distinguished property in *amber*—and was so forcibly struck with the singular discovery, that he was almost led to suppose that it possessed animation.

THEOPHRASTUS, an ancient Greek philosopher, of the Peripatetic school, who lived about three hundred years after THALES, observed the same property in *tourmalin*, which when rubbed, attracted light bodies within a limited distance, as well as *amber*. More than two hundred years passed away, before the singular discovery of THALES was again noticed by any other writer. PLINY, one of the most learned of the ancient Romans, revived the knowledge of that discovery, by recording it as a striking proof of a latent and inherent power in that odoriferous gum.

Several other naturalists of later times found that many other substances possessed the same property, and Dr. GILBERT, an

eminent English physician, by his very minute researches, considerably enlarged the list of those bodies, which were called Electrics, and published a book on the subject, about the year 1600. He also discovered what may be called *comparative attraction*—namely, that some bodies were attracted with greater force than others; and that this power was invariably dependent on the state of the atmosphere—dry air being favourable, and humidity rendering the attractive power quite inert: he accounted for the operation of this remarkable property by certain *effluvia* emitted from the attracting body being *increased* by friction. It is to this nice observer of the works of nature, that we are also indebted for pointing out the conical appearance of electrified drops of water.

The celebrated Christian philosopher, Robert Boyle, the inventor of the air-pump, greatly added by his unwearied and well directed labours, to the list of discovered electrics. He found out that vitreous

substances possessed the power of attraction in a less degree than resinous ones, and that this quality became increased in both, by their being wiped clean and warmed before the fire. He also noticed a new phenomenon—*reciprocal attraction*—that electrics when excited, were *acted upon* by other bodies, as *strongly* as they *acted* upon them.

ELECTRIC REPULSION, was next discovered by another philosopher, OTTO GUERICKE, a Prussian naturalist, in the year 1630. His experiments proved the agency of a *repelling* property in the electric fluid. He found that the substances attracted by a globe of sulphur, were afterwards repelled to a certain distance, and remained stationary, till they became in contact with another body, when they were again attracted as before, and with equal force. Thus a period of *eight hundred years had elapsed*, before the *second power* was discovered to belong to Electricity, since which, this science *advanced more*

rapidly from its *embryo* to its *infant state.*

Another singular property in Electricity was also accidently discovered by the great BOYLE; and that is LIGHT. Amber is no less indebted to that subtile fluid for its fragrance, than the precious gem of the purest water for its brilliancy—a 'diamond rubbed on stuff was found to emit light in the dark.' GUERICKE also noticed the *luminous appearance* in a glass tube when excited by rubbing. The electric light shone with great splendor to the observant eye of DR. WALL, who was so forcibly struck with its appearance, that he ascribed to *light itself an electrical property.* He pointed out the strong resemblance between *electric light* and *lightening*, from the similar effects produced by both. To OTTO GUERICKE also is ascribed the discovery of *electric light*, but be this as it may, it is certain he was the first who noticed, another singular property of Electricity, SOUND. This discovery was effected by the

rubbing of a glass tube, which produced a sparkling noise.

The immortal NEWTON, the greatest genius of his age, added his contribution of discoveries to the scanty knowledge then acquired of this science. He observed the attraction of light bodies to glass, on the opposite side to that which was excited by manual friction. This attraction of NEGATIVE ELECTRICITY, he ascribed to *an elastic* and *pervading fluid*, disengaged by the vibratory motion occasioned by rubbing. In short, after the lapse of *a century*, a new era in the history of Electricity commenced, in the year 1700. The period had then arrived, when the *glimmering twilight* was succeeded by the *increasing splendours* of *approaching day*.

It was now that some of the most learned men in Europe turned their attention to the subject, and by the construction of various ingenious instruments, explored

this hidden mine of wonders. By these means they made further interesting discoveries, all of which tended to confirm the observations of the ancient philosophers.

Hawksbee substituted a glass globe for one of sulphur, and wrote largely on Electricity. Stephen Gray, made the discovery of *communicating* this subtile fluid to bodies in which it could *not be excited*, and suggested the first idea of conductors. He also, with Desaguliers, illustrated the distinction of *electrics* and *non-electrics*, and added *air* to the number of *vitreous* non-conductors. About the same time, Du Faye, in a neighbouring kingdom, was actively engaged in prosecuting similar enquiries; and by many novel experiments, ascertained that great *heat*, as well as *humidity*, destroyed the effect of electrical operations. He also discovered that all bodies insulated by an electric, was made to receive the Electricity, and to preserve the same positive or nega-

tive power of attraction as the source from whence it was derived: that non-electrics received the imparted Electricity more than electrics, and transmitted the subtile fluid to a distance of more than *twelve hundred feet.* He was the first person who noticed the *electric spark* from a living body. He also introduced the theory of two kinds of Electricity—the one *peculiar to resinous*, and the other *to vitreous substances*—a discovery which he deduced from the experiment of the former repelling, what the latter attracted.

Gray, in 1734, not only exhibited the brilliancy of sparks, but the *divergency* of *electric light*, the rays of which issued from a point in innumerable lines, proceeding as from the centre, to the circumference of a faintly delineated circle. With him originated the idea of *metallic conductors*, and he maintained the *identity* of lightening and Electricity.

The Germans were now eagerly en-

gaged in prosecuting their enquiries into the nature of this astonishing principle, and in improving their apparatus, They produced DOUBLE GLOBES and GLASS CYLINDERS, which not only excited *greater quantities* of Electricity, but happily developed another grand property in this universal agent—HEAT. The electric *fire* was found by LUDOLPH and others to enkindle etherial spirits—to set brandy in a flame by a spark obtained from the end of a finger; the candle blown out, was found capable of being again *ignited*, and *gunpowder exploded* by contact with electrical fire; but what was more astonishing than *all*, it was completely ascertained that it *could pass through a living person* without producing the *slightest injury*.

About the year 1750, a great luminary arose to enlighten mankind in this obscure but important science—the illustrious FRANKLIN. This great man, though descended from British ancestry, and the boast of his native America, was *born for*

the world. His successful and splendid labours leave us in doubt which more to admire, the mighty powers of his mind, or the benevolence of his designs. He raised that superstructure, the top of which now reached the *clouds of heaven*, but the *foundation* of which was laid by an *Almighty Architect.* He *disarmed* the tremendous thunder of its majestic terrors, and the vivid lightening of its fierce destruction. He *promulgated* the unerring laws of electric agency, and established a theory, founded on innumerable facts.

About the same time, the late venerable prelate, DR. WATSON, also noticed, that *combustion* could be produced by *repulsive* as well as *attractive electricity;* and that the matter of both not only *passed over* the surface, but *penetrated* the substance of all conducting bodies. He also advanced the *new position*—that vitreous bodies, as electrics, did not contain *electric matter*, but were only *subservient* to its excitement, as *first movers*, and *determiners* of electrical

power. This acute perception of hidden truth, was afterwards confirmed by the opinion of WILSON, who proved by satisfactory experiments, that the *earth was the great depositary of this etherial fluid.* At this period, so propitious to useful discovery, Germany produced the important invention of the *Leyden Jar*, by the construction of which, the electric matter is *accumulated* and *concentrated* within the local limits of a few square inches, like the divergent particles of the solar rays, collected to a point in the burning mirror.

DR. WATSON, as well as FRANKLIN, observed the *two states* of the electric power. DR. MYLES, and MR. SMEATON, in this country, and Abbe NOLLET in France, remarked the effect of the electric fire on the *evaporation of fluids*, in the *various changes* of *organized bodies*, in the animal, vegetable, and mineral kingdoms.

The knowledge of *all these properties* being essential to the *medicinal uses* of

Electricity, in the relief and cure of human maladies, the proper application of this subtile agent, seemed now to be pointed out by *the finger of Omnipotence.* Nothing more appeared to be wanting to the success of medical Electricity, than to remove those terrors, with which that powerful agent, had long alarmed the uninformed. For this purpose, much had already been done. The great Franklin, to *inspire confidence* in the powers of this elementary fire—to *trace the origin* of its high descent, and *to shield the defenceless* from its unrestrained and dreadful contact, sent up a kite to the clouds, and fearlessly *brought down* the lightening within his grasp. He wrapt himself in its diffusive rays, and *proved* to the world the perfect safety to be found in its *expansive and diluted* form. This grand experiment, was made at the same time in France, which not only led to the construction of metallic conductors to save dwellings from sudden destruction, and our lives from the fury of the vivid lightening, but to teach us the certain cure of some

human diseases, by a formidable agent disarmed of its violence, and made at once a *perfectly harmless* and powerful remedy.

These splendid and interesting discoveries roused the philosophers of all countries, but particularly of Europe, to investigate still more minutely the wonderful properties of that power, which was intended by the wise and benevolent Author of nature, for *man's advantage*, though known only for ages, as the agent of terror and destruction. Many distinguished foreigners pushed their re-searches to the utmost limits that inquisitive anxiety could dictate, and by a series of novel experiments, ascertained the existence of two states of Electricity, to which the terms of *positive* and *negative* were applied—terms synonimous with those of *plus* and *minus* adopted by DR. FRANKLIN. It was discovered too, that neither of these properties were essentially inherent in vitreous or resinous electrics, and that the air itself was capable of being charged with this

subtile matter, and of retaining its influence like a Leyden Jar.

The *accumilated force* of the electric fluid, was next found subservient to chymical uses—to the *deflagration* and *revivification* of metallic substances. Hence the causes of many phenomena both *meteorological* and *atmospherical*, were now distinctly traced to the laws and attributes of an electrical principle. The avenues of knowledge being thus widely opened many distinguished and highly-gifted individuals advanced to shed new light on this interesting science—such as BECARIA, SYMNER, CANTON, CIGNA, and others.

The principal writer, however, who contributed most to improve our acquaintance with Electricity, and who recorded in his luminous pages its rise and progress, was the learned Dr. PRIESTLY. That eminent philosopher, by many original experiments enlarged the list of conducting and non-conducting fluids and solids.

He pointed out also the *lateral explosion*, and other interesting matters in electrical operations. To HENLEY we owe the knowledge of the course of electric fluid, in the discharge of the Leyden Jar, and the method of ascertaining the quantity in one charged. Many others might be mentioned, as SWINDEN, FERGUSSON, the late LORD STANHOPE, CAVALLO, LOVET, WESLEY, and BIRCH, who all deserve the regard of posterity for their assiduous labours.

Another class of benefacfors also have equal claims on the gratitude of mankind: these by their ingenuity and skill, have both discovered and improved the philosophical apparatus necessary for the developement of the electrical principle; and for the experimental and practical illustration of its powers and medical properties. The progress of improvement in every branch of science, to a mind fitted for such studies, must be a source of delightful reflection. On glancing over the various instruments invented by genius and exe-

cuted by art, we discover a gradation no less remarkable in the annals of philosophy, than in the moral progress of the world. From the simple electric apparatus found in a piece of amber, to the powerful machine at Haerlem, the contrast is as great as that of the mite with the elephant. It might be deemed superfluous to go minutely into this part of the subject, and I shall therefore only notice, that LANE, PRIESTLY, NAIRNE, JONES, and CUTHBERTSON, have by their joint labours, in various contrivances, greatly improved on the plans originating with the German mechanics, and brought these machines to a higher state of perfection, than had ever before been attained. Other and important apparatus, adapted to illustrate the powers of this agent, and to aid the philosopher in his researches and experiments, were from time to time brought forward. The single and combined jars to contain the electric matter—the simple and complex electrometers to gauge the electrical charge—the points and balls to exhibit the

brilliancy and force of electrical light and sound, with many other ingenious contrivances to ascertain the state of atmospheric Electricity, and to retain and condense this power, have been produced, and have the strongest claims on our attention.

To the celebrated DE LUC, the scientific are indebted for one of the most curious machines ever invented. It is formed of two small columns, which exhibit the powers of electrical attraction and repulsion—producing with *measured* and *uniform* minuteness, distinct vibrations in a suspended ball, like the pendulum of a clock ; presenting at once to the mind the idea of *perpetual motion*, as well as the more wonderful law maintained throughout nature, by the action and re-action of these opposing powers, in the simple substance of an elementary principle.

To the inquisitive researches of man, aided by the penetration of genius, we are also made to TASTE and SMELL the elec-

tric fluid, two of its other singular properties. When, or by whom, these phenomena were first noticed, is not recorded; but the facts themselves are too evident to our senses, to admit of doubt. The tongue when placed in contact even with the atmosphere of an electrical machine, is sure to be affected by a *taste* resembling a metallic sub-acid flavour. The olfactory as well as the gustatory nerves, convey to the sensorium peculiar feelings. The smell of the electric air, is phosphoreous and sulphureous—these two properties, added to the others, complete the attributes of that *material soul*, which inhabits this system or world, and is to its motions and revolutions, what the heart is to the human frame—"the well spring of Life," and the vital source of action and re-action.

Electricity, though material, possesses few of the grosser properties of matter. Its *origin* is derived from the great fountain of all life and power; and it *began to be*, when that Omnipotent voice called the

world out of chaos, and formed a beauteous creation of organized atoms. It is no extravagant nor impious speculation to suppose, that the Mosaic account of the production of *light*, before the *creation* of the *Sun*, alludes to the *birth* of the electric principle, as the grand material agent employed for the *formation* and *government* of nature, in all the complicated forms of her animate and inaminate existence. The *mobility* and *velocity* of Electricity, as well as its other qualities and known laws, all concur in confirming the view I have taken of its *vice-regal authority* under the *great First Cause*, so apparent in preserving the *grand equilibrium* of at least our planetary system, and the *world* we inhabit. To shew that this is no visionary hypothesis of mystic philosophy, I shall present my readers with an abstract of the known laws of the electric principle; and then enquire more particularly into the nature of that power, which is no less *formidable* in its *destructive force*, than *potent* in its *healing virtues*.

LAWS OF ELECTRICITY.

THE existence of this universally diffused principle, and its active as well as passive agency in nature, having been established by numerous experiments, the fact has become an axiom in philosophy, as incontrovertible as any numerical truth supported by mathematical demonstration. The laws by which this power is governed, are *founded* on the *nature* and *fitness* of things; are *well adapted* to its *efficient instrumentality;* and may be comprehended in a *few plain* and distinct particulars.

1st.—The electric principle *acts secretly, and becomes cognizable to our corporeal perceptions only, when its equilibrium is disturbed by some external cause.* Friction on vitreous or resinous substan-

ces—ignition or evaporation by the transmission of heat, or a dimunition of its temperature—the escape or accession of caloric; will render the electric fluid cognizable to our senses.

2nd.—The electric principle *has an attribute of motion, and passes through the substance of some bodies and fluids, and not through others.* These have been distinguished by the synonimous terms of *conductors* and *non-electrics*, or *non-conductors* or *electrics.* The order and degrees of their conducting power are indicated by the following table;—*all metals* in a proportionate degree, from the *highest* to the *lowest* in value, ores, charcoal, water, ice, snow, salts, soft stones, smoke, and steam. *Non-conductors*—vitreous, resinous, and bitumenous substances, *even* those formed of *metallic bodies*—precious stones, sulphur, wood, silk, cotton, wool, feathers, hair, paper, hard stones, and oil. The former of enumerated bodies and fluids are only the channels of communication, and

retain no part of the electric fluid in its transit or passage ; while the latter prevents its escape, and offers a resistance to its progress.

3rd.—The electric principle *possesses velocity, and will always take the shortest course in forming a conjunction with the source from which it is derived.* If two conductors of equal capability, but of unequal length be used, the shorter of the two will convey the electric matter, and the other will be nugatory. When the conducting communication terminates in a point, or is obstructed by the intervention of an electric, or imperfect conductor, the electrical fluid will be expanded into an infinity of rays, mingle with the circumambient air, or by the most violent impulse force itself through the most impenetrable bodies, with a *sound* indicating the density of its quantum, and the effort of its action.

4th.—The electric principle *may nevertheless be arrested in its course, and its*

velocity staid by electrics. This fluid excited *in*, or imparted *to*, positive or negative electrics, in an adequate degree of their capability, will retain the charge till it is conveyed off by humidity or metallic communication. Thus a leyden jar charged with electric matter, in dry and frosty weather, retains its contents for some weeks, or will be immediately discharged, by forming the circuit of communication by a metallic rod between the inner and outer surface.

5th.—The electric principle *is a mutable one, and varies its state by friction with an opposite electric*—the *positive* becomes *negative*, or *visa versa*. Rough glass will be *positively* electrified when rubbed with silk, sulphur, and metals—*negatively*, with woollens, wax, paper, and the hand. White silk rubbed with black, becomes *positively* electrified—but *negatively* so, when rubbed with paper, hair and the hand. The nearest point of a conductor to a charged electric, is *positievly* electrified, the farther *negatively*.

6th.—The electric principle *nevertheless in either state, always retains its peculiar* and *distinct properties inviolable.* Positive or attractive Electricity, either excited or imparted, will not unite with attractive Electricity, but repel it; and negative Electricity will not assimilate with a state the same as its own; while the two opposite states form an immediate junction.

7th.—Lastly. The electric principle *balances the powers of nature, preserves its harmony, and maintains that universal order, which is 'heaven's great law.'* Whether in its *positive* or *negative* state—as if by an *instinctive impulse*, it will only traverse in *that direction*, which with the quickness of thought, restores the equilibrium of its quiescent state. Thus it rectifies the effects of any accidental disturbance of its previous condition, and by a plastic and vibratory power, as well as by its occult and all prevading influence, carries *on* the great purposes of the Creator and preserver of the world.

These laws, like an adamantine chain, bind this formidable power within its assigned limits. 'Hitherto shalt thou come, but no farther,' is the irrevocable mandate of Omnipotence. Though there may be the occasional semblance of deviation, yet the *immutability* of the principle, in all its operations, will be found *strictly preserved.* This great and fundamental truth may be exemplified in numberless experiments—either from Electricity produced *artificially* by machines and philosophical apparatus, or observed as existing *naturally* in the *atmospheric* regions, in metereological appearances, or in *animal bodies;* as developed particularly in those which possess great *power of vitality* or tenacity of life, as in cats, frogs, or the torpedo.

Though it is proper I should proceed so far in elucidating the philosophy of the electrical principle, yet, as its *medical utility* in the cure of diseases, is the great and *primary object* of this work, I shall endeavour to keep within the scope of my

design, by directing my observations to that branch of the subject. It is, however, necessary to notice here, that in order to illustrate the properties, laws, and uses, of Electricity, it requires a well constructed machine of adequate powers, and a variety of ingenious apparatus. After all, the humble imitations of etherial agency, *thus displayed*, are at best but faint representations of the *grand phenomena*, and the daily revolutions in nature; which from their frequency are too apt to pass by un-noticed and unheeded, while the puny and imperfect imitations of art, attract the eager gaze, and excite the admiration of mankind—a striking proof, of the dimness of our intellectual vision, and of our powers to appreciate supreme perfection.

Remarks on the Machine and Apparatus for Medical Electricity.

IN describing the electrical apparatus, I shall confine my explanation to the *cylindrical machine*, which from experience, I have found to be vastly *superior* for *medical uses*, and not *inferior* for *philosophical experiments*, to plate ones; being at once *more simple*, *less expensive*, and requiring a *smaller portion of trouble*, than the glass planes, invented by DR. INGENHOUZ and improved by CUTHBERTSON. This machine consists of four distinct, and dissimilar parts.

1st.—The principal part consists of a well annealed glass cylinder, thin in the centre, and thick on the sides; its power will be proportioned to the smoothness and evenness of its surface, and the extent

of its diameter—which for philosophical and medical uses, ought to exceed twelve inches, with a corresponding length.

2nd.—The second part is a rubber, which consists of a cushion stuffed with horse-hair, wool, or flannel, covered with leather of a proportionate dimension to that of the cylinder, for producing friction on the surface of the glass.

3rd. part.—Is a metallic conductor of a cylindrical form, with semi-globular ends, to one of which, several points are fixed, to the other, a metal tube, or pointed wire, and over which a metal ball is screwed.

4th. part.—Is the stand which supports these electric and metallic apparatus, and the machinery which sets the whole in motion. Various contrivances have been employed for this purpose, but on every account, I prefer the double wheel which, while it *lessens labour, increases power.*

The Stand.—The cylinder being capped at the ends, and made firm by being cemented on its shoulders, is *supported* horizontally on two substantial glass pillars, one on each side—to facilitate the motion on its axis, two wheels with groves, a cat-gut band compassing them cross-ways, with a moveable handle to turn the larger wheel, by which the revolution of the cylinder is produced.

The cushion or rubber, should also be supported on a glass pillar, and affixed to an elastic plate of brass, with ball screws —an adjusting steel spring behind and another below it, to produce an horizontal *even* and *equal pressure*, on the surface of the cylinder.

The conductor, made of brass or copper, polished and lackered, should also be fixed on a solid and leaded wooden stand, supported by a glass column. The insulation of these pillars is best secured by the glass and metal caps of the cylinder being

being varnished, by which the escape of the electric fluid, from the humidity which attaches to the glass in a damp atmosphere, will be prevented. The power of the cylinder is also increased if its inner surface is thus coated, and a small hole perforated in the cap to admit air into its cavity. The wood-work should be well seasoned, made strong to uphold the whole, and turned by an engine-lath, so as to be perfectly free from points and angles: these are the *essential parts* of that philosophical apparatus.

To improve its capability still further, a conductor similar to the other, (with the exception of the collecting points) but of smaller dimensions, may be attached to the cushion or rubber, which will enable the practitioner to administer negative as well as positive Electricity—this appendage is termed *negative conductor*, while the other is described as the positive. A brass chain is suspended from the cushion to the ground, to render effectual the collection of

the electric fluid from the air and earth; and a piece of persian silk is glued on the lower part of the rubber, and made to pass between the cushion and the glass over one half the circumference of the cylinder, to increase the excitation of the electric fluid, and to prevent its dissipation before it reaches the points of the *positive conductor*. In addition to these, *few instruments* are required to *explain* the properties of Electricity, or to *apply* them medically—a Leyden jar or medical bottle, with an Electrometer to guage the quantum of its charge—chains and wire to conduct the fluid—directors of various kinds to apply it topically—a stool and chair supported on glass pillars and a metallic plate to place the patient on—will comprise the requisites for electrical application. For philosophical experiments, the list of articles must be considerably increased. To give, however, the reader something like a correct idea of the electrical machine and the necessary apparatus, I must refer

him to the *plate* and the *description* at the end of the book.

Having exhibited to the reader the machine and apparatus for the illustration of the properties, laws, and application of Electricity, it is now necessary to give some directions as to the mode of its being excited, and preserved from injury; which cannot perhaps be much better done, than by pointing out a few easy experiments to exemplify the truth of the preceding observations, on this extraordinary agent.

In the first place, air the machine before the fire, if damp—wipe it dry and dust the whole well—spread a little tallow on a piece of leather, and turn the wheel and apply it to the cylinder—then wipe it off with a hot rough towel—procure or make some amalgum for use*—spread this also on a piece of leather, and then apply it to the cylinder. Some amalgum

* See the note at end of the Book—under the head *Amalgum*.

should also be laid on the silk of the cushion, but only in the line of the rubber, which comes in contact with the glass. Should the adhesion be too great, and the revolution difficult, rub a little whiting on the silk, by which the action will be immediately corrected.

Suspend the chain from the negative conductor to the ground, and then turn the wheel, observing at the same time the excitation of electric fluid. If the machine is in order, the cylinder will sparkle, and evince the presence of electric light, and soon fill the room with electric matter. To preserve the machinery in proper order, rub off with a quill, and wipe with a towel the oxydated metals adhering to the cylinder, and the dust to the conductors, silk and cushion—taking care, to keep the whole apparatus in a dry place.

1st. Experiment.—To show the *Electric Attraction*—hold in your hand a *silk* thread, to which a feather or pith-ball is

suspended—bring it near the machine when excited, and the attraction will be evident. The dust in a room will more thickly collect about the conductors than any other part of the machine, being attracted there by the sphere of electrical influence.

2nd. Experiment.—*Comparative Attraction.* Some substances are more easily attracted than others—make the trial as before with a small pith-ball, suspended with a *worsted* thread, and it will be seen that the attraction will be greater.

3rd. Experiment.—*Reciprocal Attraction.* This will be seen by holding two pith-balls suspended by silk—the one brought within the atmosphere of the *positive*, and the other within that of the *negative* conductor—bring them then near each other, when they will attract each other.

4th. Experiment.—*Electric Repul-*

sion. The feather and pith-balls also exhibit this property—being first attracted, when brought within the sphere of electrical influence, which charges, and then repels them to the nearest conducting substance.

5th. Experiment.—*Reciprocal Repulsion.* If two feathers or pith-balls be attached to each end of a silk thread, and suspended across the wire of the conductor, they will repel each other.

6th. Experiment.—To exhibit the *Electric Light*, turn the wheel, observe the collecting points of the conductor, and unscrew the brass ball at the end—a burst of electric light will appear, if in a darkened room, as *diverging* from that point. On the negative conductor, from the pointed wire, a cone of *converging* light will be seen, if the suspended chain be removed. *The luminous conductor or exhausted jar*, will show the same appearances.

7th. Experiment. — *Electric Sound.* This will be perceived by a *rustling crackling noise* round the cylinder when well excited; or from the points which exhibit the divergent light. The brass ball of one of the directors, to which a chain should be connected, suspended to the ground and presented to the ball of the conductor—when a sparkling line of light will be seen, and a *snapping sound heard.*

8th. Experiment.—To render the *Electric Heat* distinctly perceptible, connect one of the directors with the prime conductor, and apply the ball to any part of the body covered with cloth, and then turn the wheel—a prickling and tingling heat will be felt, both at the time, and after the ball is removed.

9th. Experiment.—*The Electrical Fire* will enkindle inflammable substances. Put some spirits of wine into a table spoon, and heat it a little under a candle, then pour it into a small ladle fixed to the

positive conductor, and with an insulated director and chain, connected with the ground, take a spark from the centre of the ladle, and the spirits will be enkindled.

10th. Experiment.—*The Electric Shock* may be felt to a greater or less degree. Suspend a Leyden jar to the prime conductor, and slide the wire of the electrometer to bring the inner ball almost in contact with the conductor; from the outer one, suspend a chain of equal length, the ends of which hold in each hand, and on the revolution of the wheel, a shock will be felt: this may be made greater by withdrawing the inner ball of the electrometer to a greater distance from the conductor, or less by placing it nearer.

11th. Experiment.—To observe the *Taste* of the electric fluid. Present the tongue to the air produced from the point of the conductor after the ball is unscrewed, and the diversity of the rays acting on the nervous papillæ of that organ, will give a sub-acid and metallic flavour.

12th. Experiment.—To affect the *Olfactory nerves*, and produce the *Smell* of the electric matter, it is only necessary to be present at several revolutions of the wheel, and the Electricity excited by the machine which is dissipated in the air, will produce a sulphureous and phosphorical smell, soon rendering the air impure for respiration.

By numerous and striking experiments, these governing principles in Electricity may, by proper apparatus, be distinctly exhibited, and satisfactorily proved: but as a more complete developement of Electricity, and as a preliminary to the investigation of its medical properties, I shall now pass on to offer a few illustrations of its operative influence, as exhibited in nature, particularly in the atmospheric regions.

As Electricity mechanically excited, has led to the most important results in medical practice, by the cure of many dan-

gerous diseases—it is no less true, that the discovery of its agency in meteorology, has clearly pointed out the sure means of defence against the perils of thunder and lightening, and afforded us a certain clue to many of the secrets of nature, which had been concealed for ages, from the prying eye and keen researches of philosophy. It is now known, that the electric principle will account for a variety of the wonderful phenomena we behold in nature, many indeed of which, may be unequivocally traced to its active and passive agency.

1st.—*Thunder* and *Lightening*. The conjecture long entertained by philosophers, that Lightening and Electricity were identically the same, has been satisfactorily proved by many, but particularly by Dr. Franklin. That great man, by the simple experiment of a kite, which he raised to a thunder cloud, and by a hempen thread with which he conducted the fluid to a key suspended to it, obtained a spark from it, as from the positive conductor of

an electrical machine. He was led to make this experiment, by observing the *influence of points* in silently carrying off Electricity without an explosion. Hence the introduction of iron rods, placed perpendicularly from the earth or water, and elevated above the protected object, to secure buildings and ships from damage, and lives from destruction.

2nd. — *Storms and Tempests*, *Hail*, *Rain*, *Dew*, and *various Winds*, may also be distinctly traced to the agency of the same power. The ocean—the grand reservoir of salt and water, composed of an electric and non-electric, developes Electricity by their *friction*, which may be clearly perceived in the night, by its luminous appearance. The repelled fluid rises in vapours to the atmospheric region, and there remains for a time suspended. Particles of water from the humid earth, raised by Electricity from *evaporation* also ascend above. The air thus loaded, is by adverse winds, produced by electrical

currents, compressed; and by the latter discharging their Electricity, the surcharged clouds become condensed, and fall in dews or showers, rain or hail, storms or tempests. *Water-spouts*, too, *Whirlwinds*, and *Hurricanes*, are also produced by the power of the electric principle—they are generally attended with thunder and lightening, and their analogy, *may be proved by experiments*, with the electrical machine.

3rd.—The *Aurora Borealis*, *Falling Stars*, and *Ignus Fatuus*, also manifest the existence and operation of the electric fluid. The beautiful appearance of the *northern lights*, as was observed in the year 1804, and the less splendid and occasional exhibition of the divergent Electricity from the North Pole, may be imitated with artificial Electricity, by the luminous conductor, or *exhausted flask*; which fully prove, not only the identity of Electricity and lightening but the identity of their operation. The *falling stars*, and other meteors, which shoot

from the sky when the weather is clear and calm, are but the workings of weak Electricity, passing off to different conducting substances floating in the air, and thus uniting their opposite states, to restore the balance of their proper quantum. The most remarkable of these meteors was particularly noticed by BECCARIA, who immediately ascertained by experiment, that it was occasioned by the air being overcharged with electric matter. These balls of fire not only appear to descend from the sky on the masts and rigging of ships, but also to ascend to them from the turbulent waves, in vivid of flames of various hues, and to various heights. The *ignus fatuus* of swampy grounds, so often observed, which appears to fleet along within a yard or two of the surface, is but the emissions of inflammable air, kindled into a lambent flame by the electric spark.

4th.—*Earthquakes* and *Volcanic Eruptions* too, are allowed by philosophers to be produced by the electric action. These

tremendous scourges visit both the temperate and torrid zones—in climes propitious to health and life—in seasons mild, and in temperature equable. Even in such climates, and under the serenest skies, the electrical matter shoots in beautiful coruscations from air to earth, and from earth to air; and by the dreadful discharge of opposite Electricities applies the destructive torch to all inflammable matter within the reach of its influence, and sets the whole in an instant blaze. By the irresistible power and velocity of the electric action, whole continents are shaken and shattered in a moment—hence islands and volcanoes are formed, from the eruptions of a world convulsed. The lightening and the thunder which cap the summits of a burning mountain, point distinctly to the agent, then at work, in the bowels of an Etna, a Vesuvious, and a Hecla. These awful phenomena, may also be imitated by artificial Electricity, which proves the agency of that *elementary fire*.

The mild and gentle operations of nature in her ordinary works of *creative*, *preservative*, and *resuscitative process*, both in the animal, and vegetable kingdoms, may be as distinctly traced to the benign influence of Electricity, as can the terrific grandeur of its disturbed repose. The properties of this occult principle, is not more evident in the centrifugal and centrepetal force in the solar system, than in the systole and diastole of the human heart. This is both the main spring and pendulum, of that great horologium which points out the contrivance, and which loudly bespeaks, an *Intelligent First Cause*. To enumerate the objects which exhibit its power, would vastly exceed the compass of this volume. Only look into nature in all her forms—examine her laws, and study her appearances, and the reader will soon be enabled to trace the footsteps of this powerful and universal agent, through every *gradation*, and *every link* in the *chain* of *being*.

The philosophy of atmospheric Elec-

tricity has been amply demonstrated by many eminent and ingenious men, whose works on that subject, afford both *instruction* and *amusement*.

By the discovery, however of the electrical principle in *animal nature*, and particularly in the bodies of some fish and reptiles, we have acquired a knowledge of another most important branch of the science of Electricity—termed *animal Electricity*, or a modification of the same surprising power, which reigns and rules over this our lower world.

This was first developed by the stunning blows given by the *torpedo*, and the *gymnotus electricus*. The torpedo, is possessed of the power of giving a shock like a Leyden jar, by placing the hands on the upper and the lower surface of the fish, the charge of electric matter being always stronger *out* of its native element than in it; indeed this fish may be considered as an electrical machine, acting at

the will of the animal. All these powers of the torpedo are exceeded in the electrical eel, and by the exertion of which, it kills its prey. The instinctive perception of this fish is such, as *not* to transmit its Electricity to non-conducting substances. The singular power of the great eel of Surinam, was known to the ancients, and it was noticed by natural historians as being found in marshy places, and not to be taken 'unless intoxicated'—or rather, when the power of electric excitement was suspended or destroyed; other fish also, as the *silurus*, and the *tetrodon electricus*, possess the same power, but in a less degree.

The electric principle was also accidentally discovered in the *dead bodies of frogs*, by the delicate touch of a female hand, and a metallic substance. This led to the most important results—to the knowledge of the animal Electricity of the brain influencing the whole nervous and muscular systems, and elicited by dissimilar me-

tals, forming the circuit of communication between the origin and extremities of different nerves. These discoveries gave birth to a new science, which in honour of the learned Italian, GALVANI, who with unwearied assiduity, had prosecuted his researches in the development of this new phenomenon, has been called after his name—*Galvanism.*

The science of *Galvanism* forms the second part of the subject of this volume, and to which I shall hereafter direct the readers attention. The *metallic* and *chymical* excitement of the galvanic influence, is unquestionably *one* of the *greatest* discoveries of ancient or modern times. It is no less wonderful in its *resuscitative powers*, than is Electricity in its *vivifying properties;* but above all, its *medical energy* as far *excels* the electrical principle mechanically excited, as the *meridian blaze*, the *lunar light*—in short, where the one *ends its efficiency*, the other *begins its might.*

Having given some brief, but I hope plain illustrations of the laws of the electric power, before I quit the subject, I would just notice its influence in vegetable life, as observed in the sensitive plant, and in its partial exhibition in magnetic bodies.

" Whence does it happen, that the plant which well
" We name the *sensitive*, should move and feel ?
" Whence know her leaves to answer her command ?
" And with quick horror, fly the neighbouring hand."

This phenomenon is fully explained, by considering the plant as the depositary of *electric* matter, which both abstracts and retains the acquired fluid—and which by presenting its redundant portion to the conducting points of the human hand, is discharged of its turgid load, and drops its leaves, in token of ease. Other plants, *insulated* and *electrified*, will also erect their leaves, and be as *readily discharged* by the point of a conducting body.

The strong resemblance between *Magnetism* and *Electricity*, may be observed in

many respects. They possess in common the powers of attraction and repulsion in their different poles, but the magnetic property is only retained by ferruginous bodies; and differs from the electric, as it does not, like the latter, affect the senses, nor reside on the surface, but in the very *heart* of the loadstone—nor does it impart its power so as to become inert, as electrified bodies do, after discharging their contents. But, notwithstanding we cannot carry the analogy quite so far as to identify the principle in both from its not containing in each the exact same properties, yet there is no more reason to doubt, that Magnetism is a *modification* of Electricity, than that Galvanism is the *same power* chemically excited.

To illustrate these remarks, let the curious try the following experiment, which I have myself frequently made. Charge a large Leyden jar, and send the shock through a good sized *needle*—and by a single discharge, you will immediately give it

a *polarity* as *great* as that imparted by the loadstone; and it will then as faithfully *point* to the north star, as the mariner's compass in a case of glass. But, here we are stopped by a question, the answer to which, fixes a *dissimularity* not to be removed. Can the magnetic stone, which gives a new power to the polished wire, *disannul* its own act, and strip the recipient of its possession? No, this is the perogative of Electricity alone. Try again—and another stroke of an electrical charge will be found to *expel* the magnetic property, and the needle, obedient to its mandate, *sinks again into its former state*. If then no power can bestow that which it does not possess, we may be allowed to ask the sceptical opponent, for the solution of a difficulty, not easily given. How is it that mineral, vegetable, animal and atmospherical Electricity, should preserve a perfect *unity* of principle, in a *diversity* of operations? The philosopher will answer—it is the *law of nature*—but the Christian will pronounce it the *law of nature's God*.

THEORY OF ELECTRICITY.

IN deducing the theory of the electric principle, we ought to make the properties and laws, which are evident from the existence and operation of that universal agent, the *basis* on which we ground our hypothesis. Predilection of any kind for preconceived opinions, opposes a formidable barrier to the progress of knowledge, and the establishment of truth.

In philosophy, as well as in divinity, systems should always be made subservient to *facts*, and not facts accommodated to *systems*. The imperfection of our limited knowledge, and the diversity of views, combined with the "pride of the understanding" and the *the vain affectation of singularity*, have often led to an apparent vari-

ance of opinion without any other difference in the ideas, than what may be found in the *manner* in which the terms are *explained*, and the judgment *expressed*. In philosophical controversy, however, the furious passions are not roused "to kill and destroy," as in that of theology. In the former, the antagonists contend for truth, and not for victory—for wisdom, and not for power—for *honest fame*, and not for *sordid pelf*. Let, then, the religious bigot learn from philosophical example, to blush for his fiery zeal and ruthless fury.

Among the illustrious names who have formed theories on the electric principle—FRANKLIN, and WATSON, DU FAYE, and SYMNER, deserve chiefly to be reckoned. These learned philosophers and mathematicians, have entertained different opinions in accounting for the electrical phenomena. Some of these maintained the doctrine of the *unity* of Electricity in *distinct states*; and others, not without reasons to support their hypothesis, contended for *two distinct*

fluids in the electrical principle. The belief, however of modern Electricians in *one fluid*, *Sui generis*, possessing attraction and repulsion, and other qualities on which the system is chiefly founded, may be comprised in the following summary.

1st.—That *all* substances in nature, whether solids or fluids, animate or inanimate, have *inherent* in them a certain portion of the electric principle, and which in their *proper state*, is the *quantum sufficit* of their *natural capacity*—the just proportion of this elementary matter exactly preserving the balance—so that its mutual attraction and repulsion, should *maintain* the equilibrium of their being—*preserve* their characteristic differences, and *prevent* disorganization and decay.

2nd.—A redundancy of this elementary principle compressed into a limited capacity, either by a chemical or mechanical agency, constitutes that state which is denominated *positive* or *plus Electricity*,

while a *deficiency* of this *etherial principle*, is designated *negative*, or *minus Electricity*. These opposite conditions, each of which is DISORDER, exist as an accidental effect of some producing cause or causes, and exhibit the different appearances, which result from the action of the electric fluid.

3rd.—The *efforts* of the electrical principle to maintain its natural state in all bodies, not only appears to prove the correctness of this theory, but shows that its positive and negative, or *attracting* and *repelling* powers, are only *the directions* which it takes to restore the balance of its disturbed repose. Thus a body *positively electrified*, imparts its superabundant Electricity to one *negatively electrified*, or in a *natural state*, to enable it to bear the burden of an accumulated load. In a machine it will be observed, that the rubber and glass disturb the equilibrium of *electrical quiet*. The *chain* and *cushion*, from the *air* and *earth*, supply the loss of the elec-

tric fluid, imparted by the cylinder to the positive *conductor*, which rushing thence to surrounding atoms, returns to the source whence it came.

To illustrate these remarks, observe by way of *comparative* analogy, the operations of a common pump. The water is forced up from the well by the handle and hand, and passing through the spout falls by the power of gravity instantly to the earth. A reservoir, may for a season, contain a part, but when a vessel is over-filled, the superabundant water passes from the inside to the outside, and then returns again to its native depositary. But when a vessel is not over-filled, the water will be *retained* in it for some time, till it is evaporated; and then descends again in fruitful showers on the parched ground. So it is with the Leyden jar, when charged with the electric fluid; but it acts with this difference, that its *outside* is in a *deficient* or *attractive state*, while its *inside* is *overloaded* with a *propelling* fluid, and the

whole of its contents are discharged at once.

Gravity can make but humble claims on the electrical principle, and even these are granted rather as a *boon*, than a *right*, for the *equilibrium* of nature, is its *grand business* and *end*. The Franklinian theory therefore, has been found so agreeable to the analogy of nature, that it has been generally adopted. Like the Newtonian system, the *simplicity* of the *principle*, gives *dignity* to the *doctrine;* while it supplies the *best key* to many dark, and otherwise *inexplicable points* in *philosophy*, *phisiology* and *pathology*.

The theory of *two distinct fluids* originated with Du Faye, an eminent French philosopher, contemporary with Franklin, which he deduced from his practical researches into the different properties of vitreous and resinous electrics, excited by friction. As he found the Electricity developed by the positive and negative elec-

trics, was dissimilar in its states, he concluded they were *distinct* fluids, though possessing the *same* nature, and *residing together* in all bodies. From their being separated in conductors, as well as from their reciprocal efforts to unite again, it was supposed the truth of this theory was made apparent. This opinion was strongly supported by SYMNER, who had philosophised so ingeniously on the subject, that though it was contrary to the known laws of Electricity, he gave to the error an air of plausibility.

This opinion, however, is now as much exploded as the astronomical systems of PTOLEMY or TYCHO BRAHE. The double current of these electricians imposed as much labour on the electric principle, as the immense revolutions of these astronomers did on the sun performing its circuit round the earth, or the primary planets round their satellites. The honour of establishing a *sound theory*, founded on experimental results is justly due to

Drs. Franklin and Watson—names, which will live in the records of history, and be handed down with honour, to the remotest posterity.

Having now given a brief but correct sketch of the history, properties, laws and theory of Electricity, I shall proceed to advert to the philosophical opinions, which at various times, have been entertained of its *nature*. It has already been observed in the definition of the *term*, that the *essential* principle of the electric power was *unknown*. Philosophers, however, have agreed to call it a *fluid*, *Sui generis*, possessing an essence peculiar to itself. Some have supposed it to be an *unctuous effluvia*, emanating from vitreous or resinous bodies, and excited by friction; and this conjecture led to the fanciful notion of *affluences* and *effluences*.

Others have imagined it to be the *æther* spoken of by Sir Isaac Newton, 'in the effects of which, a certain subtile medium

was concerned,' while the philosophers of the last century called it *elementary fire*, or a *modification* of that element which we call *fire*—and some few conceived it to be a fluid *distinct* from chymical fire, notwithstanding the striking resemblance it bears to the latter.

That Electricity is a *subtile elementary principle* in all bodies and fluids in nature, and *is* to gross matter, what the *soul* is to man, and *instinct* to brutes, a *primum mobile*, is a probable conjecture. It may be the cause of the attraction of *affinity* and *cohesion* in the mineral, as it may be that of *capillary* attraction in the vegetable kingdom. This wonderful principle, whether it reside in the great *orb of day*, or in *his splendid beams* which illuminate our world—whether it be found in the *fuel* that warms and cheers our hearths, or issues from *volcanic crators* as its central abode—whether it *glow in our blood*, and preserve or consume our vitals—is still the *same essential principle*, *varied* only in its forms, influences, and operations.

These kinds of fires, have with Electricity the *same* properties, and produce *similar* effects. 'The *solar fire* will burn fuel; the *culinary*, promote vegetation; and the *elementary*, light a candle' and explode gunpowder. The *primary colours* may be exhibited by *each*, and *metallic fusion* be produced by *either*. Friction will *enkindle* wood—Electricity *dilate* bodies; and like solar and culinary fire, *accelerate* evaporation,—it is as necessary to respiration as to combustion. If an animal and a candle be placed in an oven, and the external air be excluded, the moment the candle goes out, that moment the animal dies.

That the electrical principle is the *cause* of *light* and *colour* cannot be doubted, after the *decisive experiments* of Sir HUMPHREY DAVY. The *solar beams*, the *phosphorical light*, and the *gleam* emitted from the curious glow worm, may justly be ascribed to that subtile, and *all pervading* principle.

Should any of my readers suppose that my prediliction for the science, may have led me to attribute to Electricity a power and pre-eminence, to which it is not strictly entitled—I can only say, that as a material and divisible substance, it has here no dignified characteristics, than those with which it is *invested* — no other pre-eminence than that which it has obtained from above. If it has been stamped by infinite wisdom with the divine *impress of creative* power—if it has been made the great agent for *preserving* the grand balance of universal harmony, I may surely be allowed, without any charge of weakness, to revere its agency, as the *delegated authority* of *Omnipotent Majesty.*

A christian philosopher, without any imputation of profanity, may be allowed to maintain, that the electric principle is the apparent means by which the Deity acts throughout the universe. It may also be considered as *one* medium through which He exhibits to mortals, his glorious

perfections in the *moral government* of the world. It would be in vain to have recourse to the reveries of *heathen mythology* —to the fabulous tales of pagan nations; or to the romantic history of the imaginary deities of Greece and Rome, for any rational illustration of the ways of providence, in the government of the world. These delusions, the offspring of ignorance and superstition, shine indeed in the fictions of poetry, but afford no such discoveries, as may be found in the sacred volume.

Whatever may be thought by the fastidious critic, the candid reader will not at least hastily condemn me for turning to the pages of divine revelation, for collateral evidence to the *truth* of my philosophical opinions. I would in this as well as in theological sentiments say, 'to the law—and to the testimony.' There the sublimity of the electric medium, employed in the reward of virtue and the punishment crime, is made to strike the senses with reverential

awe. The manifestation of JEHOVAH's presence was made to man, by the *light* and *blaze* of an *elementary principle*, miraculously concentrated by supernatural power. When disorder was introduced by transgression into Eden, the *flaming sword* waved at the gates of paradise lost. The bituminous soil of the devoted cities was also enkindled by *electric fire*—and a human body converted into a metallic pillar, as a monument of disobedience. The offering of the faithful Abraham, was by the agency of the same power proved to be acceptable; and the *electric cloud* became to his descendants, in their dreary and memorable pilgrimage—both a *direction* and *defence*. The *Law* was delivered from Sinai with *thunder* and *lightening*, amidst the rockings of the mountain. The temple of Jerusalem, consecrated by Solomon, was dignified by the descent *of fire* from heaven, which *consumed* his sacrifice. Under the theocracy of Israel, the *moral attributes* of their almighty king, were pointedly displayed by the *shekinah*

of the ark, in the *holy* of *holies*. Similar proofs of the active agency of the electric principle, are abundantly supplied by the *gospel records*. On the ever memorable day of *Pentecost* it was miraculously displayed, and scarcely less so, on the singular conversion of the great Apostle of the Gentiles. Indeed, it is not too bold to maintain that the grand and *terrific* display of this irresistable and sublime power, is reserved for that period 'when a mighty angel shall come down from heaven with one foot on the sea, and another on the earth, lift up his hand, and swear by him that liveth for ever and ever, that time shall be no longer.' 'Then shall the sun be turned into *darkness*, and the moon into blood, and the powers of the heavens shall be *shaken* with a *great noise*, the elements *melt* with *fervent heat*, and the Lord himself shall be revealed from heaven with his mighty angels, in *flaming fire*, taking vengeance on them. that know him not, nor obey his gospel.'

ON MEDICAL ELECTRICITY.

HAVING concisely explained the powers, operation and laws, of the electrical principle, I shall now proceed to examine its medical properties. Here it will be seen, that however powerful its concentrated influence, yet its application may be so modified, as to renovate and to preserve health and life. Since it has pleased divine wisdom to deposit in *vegetable* and *mineral poisons, healing* properties calculated to cure disorder and invigorate health, by substances so dissimilar to those of which the animal machine is composed—surely it can excite little surprise, to find in the electric fluid, which is a component of living bodies, a remedy still more efficacious for human diseases.

That Electricity as a medical agent, has a just claim to the character of one of 'heaven's best gift's' to suffering humanity, will be satisfactorily shewn by incontestible facts. In order to give the reader a clear idea of this philosophical remedy, in the cure of various diseases, I shall point out its remedial powers—notice the *disorders* to which it is applicable—the *principles* on which it acts—the *modes* in which it should be employed for medical purposes—and then point out the *apparent reasons* which have opposed its more general adoption in medical practice.

I.—Medical Properties. The electric fluid, has been generally considered by professors of the healing art, as a *powerful stimulant*, in which term they have comprehended *all* its beneficial qualities—That it is an excitant of the most efficient kind, is a known truth which admits of no doubt. Its *superiority* to every other stimulus, might be inferred from its VERY NATURE. It is a simple and uncompounded

fluid, prevading the hardest substances in an instant—and not acting on the surface only, but passing through the internal parts of the human body, as a natural excitant of the vital energy. Its influence is powerful on the *nervous*, *vascular*, *muscular*, and the *secretory* systems of the human body.

The *nervous system*, notwithstanding our minute researches is still but imperfectly known. Whether, however, the nerves be filamentary tubes or fibres, is less material to our present purpose, than the generally admitted opinion—that they convey a powerful influence to the vital and other organs, in order to maintain their action. The influence of the atmosphere, when charged with electric matter before a thunder storm, is powerfully felt by persons, whose nervous sensibility often produces serious disturbance of the mental and corporeal functions. This fact alone, is sufficient to establish the truth of the preceding remark, but the cases in

this publication, by practical illustration will demonstrate the power of electrical influence, on the nerves of the human body.

That the *vascular system*, is also excited by its impetus to greater activity, is a truth which may be fully shown. The inspiration of air, charged by a due proportion of positive Electricity is received into the lungs, and is instantly dispersed through the pulmonary vessels into the blood; and from thence diffused into all the minuter ramifications of arteries and veins. The increase of circulation, denoted by a stronger and quicker pulse, may be attributed by sceptical opposers to the influence of the passions, or to the operations of thought; but the opening a vein, proves my point to demonstration. If venesection be performed on a patient who is *charged* with electric matter, the blood will flow from the orifice with all the force of a fluid injected from a syringe; but, suspend the electrical excitant, and the ordinary flow will only be obtained.

This mode will powerfully aid the use of the lancet, in cases where the operation of phlebotomy is of difficult performance.

The *muscular powers*, whether voluntary or involuntary, are also strongly affected and roused into action, by the electric stimulus. These powers may be considered as the bands which brace and invigorate the joints, and afford not only solid support to erect or recumbent posture, but by their obedience to the will, give also power to the exertions of strength, and to feats of agility. If the palsied limb be subjected to an electric current in vibratory undulations, a tremor ensues. If the charge of a Leyden jar be passed through it, a convulsive motion is produced; the most ponderous bodies laid on the muscles, will not prevent this sudden action. Muscular contraction will yield to its frequent employment. For example, a locked jaw be removed by the transmission of the electric fluid.

Electricity is also a powerful excitant of the *secretory system*, and the glands. The glands being the filterers of the circulating fluids, and the regulators of the secretions, which not only carry on the digestive process, but supply the fluid which soothes the irritation of friction, in the numberless movements of the joints and muscles. All the wastes of nature are by *their* functions expelled from the body, and many diseases are occasioned by *their* obstructions. The electric fluid by increasing the the nervous power and accelerating the circulation, must consequently give both strength and action, not only to the glandular but to the muscular system. Having concisely alluded to the effects of Electricity under these four general heads, I shall proceed to notice the *disorders* to which it is applicable.

II. The *diseases* to which the electric stimulant is applicable, may be comprehended under the generic character of those which arise from *defective energy*, occa-

sioned by a *diminution*, *exhaustion*, or *suppression* of *the powers of vitality*. Philosophical physicians have generally applied this remedy in those complaints which spring from derangement of the *nervous system*—as palsy in all its varieties—general and partial loss of the sensorial powers—such as *blindness*, *deafness*, *epilepsy*, *St. Vitus's dance*, *&c.* Disorders also which affect *the circulation*—*rheumatism*, *acute* and *chronic*—*sciatia*, *lumbago*, *gout*, *atonic* and *misplaced*, *retrocedent* and *irregular*—*cold extremities*, *chronic inflammation*, *obstructions*, &c. In cases of *muscular* and *tendinous contraction* or *relaxation*, *tetanus*, *lock-jaw*, *&c*, In *glandular* affections, *swellings*, *dropsies*, *general* and *partial*, and in every *defect* of action in the *absorbents*—*constipation*, *scrophulous tumours*, *ulcers*, *torpid*, *indurated*, and *schirrus glands*, and *many* surgical cases produced by accidental diseases. In short, Electricity is applicable to many complaints both *constitutional* and *local*, by its *general influence* on the system, or by its *topical effects on* diseased parts.

It must, however, be observed, that though its sanative powers may be beneficially employed in the enumerated maladies, and in *many more* originating in the same causes, yet there are *stages* in those disorders in which the administration of it *might be injudiciously used.* There is in the curative treatment of human maladies, a *proper time* for the right application of such a powerful agency, and the *fit period* too, in which this excitant should *be used* or *suspended.* The *duration* of the disorder, with the *age* of the sufferer, and *other weighty* circumstances, should be duly considered, in order to render the remedy effiicient, and to preserve that high and extraordinary reputation, which by a judicious administration of its curative powers it has already acquired.

III. As to a long investigation of the *principles*, on which the electric fluid acts in these various cases—that would only be a kind of enquiry, more instructive to the scientific student, than useful or gratifying

to the untaught invalid. It has been already stated, that the medical power of this subtile agent, consists in *exciting* or *resuscitating* the *depressed* capabilities of the *nervous*, *vascular*, *muscular*, and *secretory* systems—in *equalizing the animal heat*, and in aiding nature in her efforts to regain the lost balance of her *corporeal*, *sensorial*, and *intellectual* powers.

Though the practical results of the medical employment of Electricity, furnish the most incontrovertible proofs of its efficacy, yet, I am unwilling to pass over this part of the subject, without offering something like an opinion on the principles in which it acts on the causes of human disease. In philosophising on this remedy, I wish distinctly to be understood, as not deducing any theory from preconceived notions; but from the nature, laws, and properties of electrical agency, as they are displayed in the immediate and remote effects produced in the constitutional and local derangements of the human body, considered in connection with the mind and the passions.

It is known that all bodies in nature, whether conductors, or non-conductors, possess a certain portion of the electric principle as essential to their preservation, and if any cause should disturb that equilibrium which constitutes health, *disorder* must ensue. This will happen, either from the *repletion* or *diminution* of that universally diffused fluid, with which all substances are *saturated*, according to their different capacities. *Disease* then commences, and is experienced by the sufferer, in proportion to the *degree* of the malady, and the *susceptibilities* of his nervous system—uneasiness first, pain next, and when beyond the point of endurance, agony, syncope, stupor—convulsions follow, and last of all, the struggles of departing life.

Disease is nothing more than the *efforts* of nature to recover that lost equilibrium of health, which in the disturbed electrics or conductors, evince the labours of the electrical principle, to regain its natural state. What we observe in the de-

rangements of the animal machinery, is in correspondence with the convulsions of the *natural* and *moral world*—in all these we discover a common effort to *attain* and to *maintain* that comparative, relative, and *balanced quiescence*, which is the perfection of being. Disease, therefore, proves that *sound health* is the gift of heaven, and the endowment of creatures, who are destined to preserve the boon by the sweat of their brow. It is by obedience to this supreme decree, that we are enabled to cherish health, to discharge all the duties of life, and are fitted to enjoy unalloyed, all the rational and animal gratifications, suited to our nature.

Though the electric principle be universally diffused throughout all bodies, pervading even the minutest particle of matter, yet, as in a machine when at perfect rest, it may be easily excited by a chemical and mechanical agency, acting on some part of the body to support its adequate quantum necessary for the various functions of the

vital powers. By this process, the ordinary expenditure of strength is supplied, and the body fortified against the *accumulating* or *depriving* agency of external influence.

Many eminent philosophers have maintained the *identity* of Electricity and the nervous fluid, and others the *similarity* or *affinity* between the animal spirits and elementary fire. One of the first writers on animal chymistry supports that doctrine, the truth of which is now acknowledged by all —that *heat* is the great exciting cause of animal life. He proves too that vegetation, also proceeds from this principle—that the characteristic differences of men and nations, depend on the same cause as that which keeps alive the vital spark, in rational and irrational beings.

Phlosophical experiments too, have proved by analogy of reasoning and direct evidence, a striking similarity of effects on the living body by the substitution of

electric for *nervous* influence—a point, which will be fully established under the head, *Galvanism*. From the brain, the nervous fluid passes by the nerves to every part of the body—there must therefore be an accumulation of animal spirits excited by a chymical action, and diffused through every atom of solids or fluids in the corporeal organization, for the purposes of preserving all our powers in proper vigour. Like the heart in the body, which is the fountain of the blood, pouring forth its precious contents to the minutest arteries, so the brain has the higher office of transmitting its energetic influence to the remotest parts, and is perhaps the propelling power of that arterial action, which performs but the subordinate part, in the preservation of life.

The positive Electricity of the brain, like the arterial blood of the heart, and the refracted rays of the sun, returns again in negative Electricity, to the source whence it flowed. Thus the circle of ex-

istence is preserved, but when an obstruction of its free course takes place, the impediment becomes a bar to the enjoyment of health—disorder ensues, and which if not counteracted, terminates in the death of the body. It would be easy further to illustrate the indirect effects produced by the deprivation and accumulation of the nervous or electric influence, as they appear in the diseased functions of the vital and other organs—as well as to point out the immediate and remote consequences on the sensorial powers, mental operations, and passions of the human soul.

There are many disorders occasioned by an increase of the powers of vitality, and others by their sudden or gradual diminution. It has been shown that Electricity is an elementary fire, and therefore the cause of animal heat, and by its abundance or deficiency, produces either the burning fever, acute and inflammatory diseases, of the most dangerous kind ; or those with the icy coldness of paralysis. The di-

minished powers of the senses—the sluggish circulation—the inactive limb, and the torpid glands, with all the irregularities of secretion, are to be traced to the same cause. On *chymical* principles then, the application of electric and animal heat, must expand, rarify, and invigorate; in short produce the most beneficial change, in a system, where it is defective.

If I were further to illustrate this idea, I would point to the sun, which to our system is both 'eye and soul,'—the elaboratory of chymical life in the planetary worlds. The elementary fire emitted from his luminous atmosphere (according to the opinion of Dr. Herschel,) is conveyed by conducting media to the terraqueous globe. The caloric being the matter of heat, is the prolific principle of germination, combustion, revivification, and all the changes that take place on the earth. It is this influence that acts on rivers and oceans, like the arterial system in animal bodies; and by its agency, this compara-

tively diminitive speck, floating in infinite space, with all its myriads of animated beings, are preserved in conformity to the sovereign will of him, who called them into existence.

Another principle on which Electricity acts on the human body—is the *mechanical impetus* given by the interruption of its current, through the parts interposed to the circuit of its revolution; as in congestion of the minute vessels of circulation—in the induration of glands, or in the obstruction of extraneous bodies which impede the flow of the natural secretions, where a *propelling* power, and not a *chymical change* is necessary. The gradual, or instantaneous electric convulsion, produces effects on the immediate seat of disease, which no other known power can so *directly* reach. The power of *steam* is well understood by the scientific engineer—but what, after all, are the powers of that agent, compared with those of Electricity? In that machinery, the culinary fire gives the fluid a force and

velocity, which sets in motion the most complicated movements—but here, by the vibratory, or instantaneous transmission of the electric fluid, all resistance is overcome, and the inmost recesses of the most hidden parts are pervaded and reanimated, by its penetrating power.

As the cure, rather than a critical analysis of disease, is the object which I have in view — enough has been said on the latter branch of the subject, to enable the public to sit in judgment on my opinions, and to the decision of that tribunal I leave them, without either fear or presumption. Since the period of our limited duration, even where it exceeds the limits of ordinary longevity, is far too short for the full comprehension of the organic machinery of the minutest animalculæ—what then must be the time required, to *understand clearly*, and to *explain fully*, the amazing combination of powers centered in the WORLD OF MAN?

IV. It now remains, previous to the statement of the cases, briefly to notice the various *modes* in which Electricity can be administered. The *success* of Electricity, both in medical and surgical cases, will very much depend on the *manner* in which this stimulant is employed; on the *time* it is actually used; on the *frequency* of its repetition; and on *other circumstances*, attending its immediate and subsequent effects.

The *first mode*, is that of *charging the system* with the electric fluid, and this may be done either with the positive or negative conductor. The patient is placed on a chair or stool with glass legs, and by a chain or wire communicating with the conductor, receives the imparted Electricity like a Leyden jar, and may be discharged of the superabundant quantity he has acquired, either spontaneously and suddenly, or slowly and imperceptibly. The treatment, by this operation, is a *constitutional* one, the system being generally excited—the nervous, vascular, secretory, and mus-

cular systems, all partake of the benefits of the active stimulus. The feelings experienced by the patient, are produced more from the effects of the excitement, than from the immediate action of the fluid. The hair of the head becomes erect, the animal spirits are refreshed, and cheerfulness acquired—a genial glow is diffused over the frame, perspiration ensues, and corporeal strength is increased. In this mode, *nothing painful* or *unpleasant* is felt—on the contrary, the sensations excited, are altogether *congenial* to the feelings of the invalid, requiring the *tonic* plan of treatment.

The *second mode* of Electrifying, is, that of *passing the electric current* through the diseased parts, and here too, the feelings of the patient, may be made *agreeable* and even pleasurable. This is done in two ways, but it is of great importance to choose that which is best suited to the character and stage of the disease. A point presented to the affected parts of the body, charged as before, will convey the fluid

from the patient to the earth, without subjecting him to the violence of shocks. Or, he may be placed on a metallic plate in connection with the earth, and receive from the positive conductor the diverging rays of the Electricity which enters in at the diseased parts, passing down to the lower extremities, and from thence to the earth. This plan of application may be varied, but the *principle* and *effects* will be the same. The process is known to the scientific by the term of *electrical aura*, or air—the administering which is done, either by throwing it on the patient, or extracting it from him, while his body is charged with more than his natural quantity of Electricity.

Here we have both a *constitutional* and *local* application. In insulation, the *former*, and when discharged by the point, the *latter*. It may be also observed, that by the effects thus produced, the energies of life are increased; the irritation of local imflammation is allayed; the balance of

circulation restored; the nervous irratibility subdued; and the disturbed feelings produced by pain, soothed into ease and repose. The *dispersion* or *suppuration* of tumors, are also obtained by the electric breeze: as well as other beneficial changes in the vital organs, and in the circulating fluids of the human body.

In the paralized limb, or in the torpid organs, where the loss of nervous sensibility, animal heat, and muscular power is evident—and where the milder stimulus would be inefficient from the diminished susceptibility of the diseased parts, the electric fluid may be imparted to the patient by a wooden or brass ball of a glass director, in communication with a positive conductor, while he is placed on the metallic plate—or extracted from him on the same plan, by any director in communication with the earth, or negative conductor. The interposition of an imperfect electric, such as cloth or flannel, slightly impeding the course of the fluid in its ingress and

egress to and from the parts operated on, produces a sensible effect on the skin, the sub-cutaneous vessels of the circulation, and on the nerves and muscles of that part of the body in a line with the ball placed in contact with the earth.

The feelings excited by this mode of application resemble those produced by the friction of a hard sharp brush, attended with a sense of prickling heat, which though not *so* agreeable as the *electric aura*, to one whose sensibilities are not dormant, is *particularly so* to those afflicted individuals whose sensorial power is almost extinguished, and whose inert susceptibility requires to be roused.

The *electric friction*, is a most beneficial process, and applicable to the last mentioned cases, with an efficacy much surpassing the stimulus of embrocations, cataplasms, blisters, or *manual friction*. This last remedy has of late become a very fashionable one with some medical men;

and indeed the principle on which the *rubbing plan* acts, is itself founded on the laws of Electricity—it is no more than the excitation of two imperfect electrics, which developes a portion of Electricity on the surface of bodies, and which in the healthy person is in a *plus*, and in the invalid, in a *minus* state; the results however sought to be obtained by this remedy, are equalization of animal heat, and a reanimation of dormant powers, by *chymical* and *mechanical* agency. But if such a remedy be productive of benefit, which in many cases it undoubtedly has been—how much more potent and efficacious must the *electric friction* be in the same disorders, with the great advantages of all the *combined* and *superior powers* of excitation and accumulation?

The *third mode* of administering Electricity is, by concentrating the fluid in a small glass tube, partly coated with tin foil. This improvement of the Leyden jar, is called a medical bottle, and is suspended

to the positive conductor—a chain is fixed to the crook under it, and to the other end is attached a glass handle director. The electrometer is placed on the prime conductor, and a chain is also hooked to it, with another insulated director at its extremity—this is represented in the 2nd plate, at the end of the book.

The patient is placed on a chair, with one or both of the upper or lower extremities in contact with a metallic substance and the earth. The electric current accumulated in the medical bottle is made to pass through the body, and to act on the system ; or by the guidance of the director only through the diseased parts. The electrometer, being drawn near, or removed far from the conductor, *materially* alters the application—by the *former*, friction may be produced—by the *latter*, small convulsive action ; but, at a medium distance, an undulatory or tremulous motion only is perceived, which is by *no means disagreeable* to the feelings of even one in health,

but perfectly *congenial* to those of persons, whose cases require such a mode of excitement, as that of the *vibratory impetus, of an interrupted electrical discharge.* The effects of this application are an agreeable glow over the body, or in the parts acted on —a tingling feeling, indicating an increased circulation and vigour, such as are felt by persons, who take a long walk in frosty weather. Before, however, the bottle is suspended to the conductor, *it must never be forgotten, that the wire which passes through its cap, should be taken out— otherwise* SHOCKS *will be given, instead of* VIBRATIONS.

The *fourth mode* is, that of applying Electricity by *shocks*, which is the only one in which it becomes *disagreeable* to the feelings. This is performed by putting the long wire into the bottle, and removing the inner ball of the electrometer to a distance from the positive conductor, regulating the force, in the manner, I have before described. This sudden discharge of the Leyden jar,

is done by placing the directors at each extremity of the parts through which the fluid is to pass, and in an instant, a benumbing blow is felt in the line of communication, which gives a sudden action to the system, or to the limbs, similar to that of plunging into a cold-bath—beneficial only in those cases where there is a correspondent reaction; but, by no means either so *efficient* or *safe*, as have been too generally supposed. This mechanical excitement, like the bastinado, will not prove so great a *fillip*, as it is too often represented to be, by ignorant practitioners; and I can safely venture to assert, that more mischief has resulted from this method of administering Electricity, than by *any other* way in which it has ever been employed. But, where *induration* exists, and dispersion or suppuration of tumours are required, it may be productive of salutary effects.

There are *various other ways* in which this powerful stimulus may be applied, but which it would prove more tedious than in-

structive to the reader, to describe in detail. I think it, therefore, of more importance to observe, that after many repeated and effectual trials, I have discovered a method, by which I can with ease *combine*, the employment of this subtile fluid in *all its modes* of operation (except shocks) at one and the same time; and by a *threefold current*, *concentrate* its influence and action on the system, and on the diseased parts, both as a constitutional and local remedy. In this way, Electricity applies with an energy, scarcely possible to be conceived, but which may be felt by old age or infancy, *without pain* or inconvenience; and so immediate are its effects, that one *fourth* of the number of applications will produce *all the benefits*, that can be obtained from any other *mode*, *however long continued*.

This improvement in the administration of Electricity, will not only prove a *great saving* of *time* and *expense*, but offer a more *rapid* removal of disease, and a *less*

trying task, on the patience and suffering, of the invalid.

The employment of Electricity by the charge of batteries, is as *preposterous* as *dangerous*, and I therefore earnestly diswade my afflicted readers, from submitting to such hazardous experiments.

The right application of Electricity, requires *more* than the knowledge of its philosophical powers or medical properties: *more* than even a tolerably correct notion of the modes of its general or topical application. It unquestionably *requires* an accurate knowledge of the disease—the *constitutional temperament* of the patient, as well as *skill* in the selection of that mode, the most likely to prove successful. In addition to all this, the variations in the degree of excitement, the time proper for each application, and for the discontinuance of its employment, are highly important. No man can be competent to apply it judiciously, without *possessing* some *knowledge*

of philosophy and anatomy, physiology, and pathology, together with *long practical experience.* It is not the mere *mechanical operator* that can dispense this elementary medicine with any advantage to society. He may perhaps stumble on success by a random chance, 'like a bow at a venture,' but 'the odds are fearfully against him,' or rather against HIS CREDULOUS PATIENT, whom without *skill* or *caution*, he subjects both to *dread* and *danger.* The *charlatan electrican* therefore, is more to be feared than the *empirical vender* of secret nostrums, because the former will often be led to try the employment of this powerful remedy injudiciously, in *complex* and *difficult* cases, while the drugs of the latter, may with less danger be hazarded in *functional derangements*, and *sympathetic affections.*

In the disorders to which Electricity is applicable, I have had opportunities of witnessing its effects, both in the incipient and protracted state of the disease—in

instances of infancy, youth, manhood, and old age; and in no case whatever has the slightest injury resulted to the patient. On the contrary, I have generally found its effects beneficial, but particularly so in the delicate and painful diseases peculiar to females at certain critical periods of life —in paralysis in all its varieties, in rheumatism, sciatica, lumbago, &c. The *mode* I have adopted in the application of Electricity, has been varied according to the *age*, *constitution*, *habits*, and *sensibilities* of the patient; and also by other circumstances connected with the *nature* and *stage* of his disorder.

The old mode of electrifying was, by giving powerful shocks of two-gallon jars, and, since, the charge has been diminished to quarts and pints. I have, however, by a novel, and I trust a happy improvement, done away with the *practice* of *shocks* altogether, except in cases of *great local insensibility*, in which a *strong* action is necessary to *rouze* the dormant powers. My

general plan is, to pour into the system a diluted stream of Electricity in its *mild* and expansive form, directing the electric current to and through the diseased parts, without producing any of those shocks, which, where they do not injure, must at least *agitate* and *alarm* the timid. This system of treatment is founded on the laws of equilibrium, of action and re-action; my primary maxim being, never to debilitate or oppress the natural energies, but to soothe the irritability of local inflammation, and to aid nature in awakening the dormant powers. It is my practice to *mark* the immediate effects and subsequent results, by the expression of the eye and of the countenance—by *varying* the mode of operation according to the feelings of the patient—by making minute enquiries as to the effects felt from time to time—a mode, which, of all others, is the best adapted to procure the *instructive counsels of nature, in all cases the best and most unerring guide.*

In my statement of the following cases, which are intended to illustrate the preceding remarks; I shall aim at as much brevity, as may be consistent with perspicuity. The facts will speak for themselves. Though the names of some of the parties are not given from motives of delicacy, yet *I am warranted, in referring to those individuals, any application coming from a respectable quarter.* To aid the views of the intelligent reader in forming an impartial judgement, on the real character of medical Electricity, I shall adduce some instances in which it has disappointed the two sanguine hopes of the afflicted. It will thus be seen, that I do not hold out this remedy, beneficial as it is, ' as an infallible cure for every ill,' but as an efficient means, when judiciously employed, of *combating* a long list of *chronic disorders*, *changing* the *action* of *diseased parts*, and *restoring* the afflicted to perfect health. The description of the cures will be given in plain language, divested of the technicalities of medical phraseology, that the

unlearned invalid may the better judge of the various symptoms which characterize the different diseases relieved or cured, and decide for himself what affinity they bear to his own complaint.

These cases have been selected from many others, but as few are given under each head of disease, if they should be insufficient to satisfy the most incredulous, no body of evidence whatever could supply the defect. Some of them have occurred in different parts of the kingdom, where I happened to reside; others, during my gratuitous superintendance of a public institution at Southampton; and many of them, since my professional establishment in town. They disclose such a series of interesting facts, that the more they are known, the more they will be valued as a blessing to mankind.

DISORDERS OF THE NERVOUS SYSTEM.

PALSY.

Palsy of the Head and Face.

CASE 1.—Mr. L—, about thirty-five years of age, of a phlegmatic temperament, and of regular habits, had for many years laboured under frequent attacks of indigestion, constipation, and head-ache. His close and intense application to literary and scientific pursuits, greatly contributed to produce those complaints. Having some knowledge of medicine, Mr. L. prescribed for himself, and had frequent recourse to calomel, and other preparations of mercury. This occasioned great general debility, the effects of which were in time sensibly felt, for a few days after taking one of these doses, on trying to play his flute, he was surprised to find he had lost the power to

perform with his usual facility. He took the instrument to pieces, but could discover in no part, any cause to account for this strange defect. On the following day, in his evening walk, he was exposed to an easterly wind on the right side of his face, from which however, he felt no *immediate* inconvenience, but on again taking up his flute, he found himself wholly incapable to make it even sound.

On the following morning, a friend who paid him a visit, observed a great alteration in his face, of which, he was not then himself in the least conscious. On looking in the glass, he was greatly alarmed to find his countenance quite distorted—the muscles of the right cheek were completely paralyzed—the cheek was swelled—the mouth drawn down—the eye-lid almost closed, and the vision much obstructed. The tongue also felt the effects of the shock by a loss of power—articulation failed, and the memory became impaired. A physician was sent for, who pronounced the

case to be a *partial palsy*. He ordered a blister to the head, which being objected to, it was applied to the nape of the neck. Liniment of cantharides for the face, and purgative medicines, were also ordered. This treatment was persevered in for a fortnight, with little advantage. The blister discharged profusely, and brought on an erisipelas—the liniment only irritated the parts, and the purgatives weakened the patient. The tongue on the affected side became rough, and incapable of taste; and the salivary glands secreted most copiously.

In this stage of the disorder, the patient proposed to his medical attendant a trial of Electricity, which though the latter acquiesced in, he gave him no hopes of benefit from the experiment. Judging in this case, that a mild stimulus would be sufficient to restore the loss of nervous and muscular power, occasioned by a *gradual* diminution of vital energy, I employed insulation and the electric aura, and subsequently the electric friction, with decided

advantage. This process was daily repeated for a fortnight, when the patient was perfectly recovered from every *appearance*, and *feeling* of the complaint. A period of *ten years* has since elapsed, and though he has been exposed to the same causes that first produced his disorder, he has had no return whatever of the malady. Many similar cases have, from time to time, occurred in my practice, but I have met with few in which the cure was so complete—a circumstance, which in a great measure may be accounted for, from the disorder having been attacked in time, before it had produced any change of structure.

CASE 2.—Mr. C—n, Snowhill, was sent to me by Dr. B. in the month of July last. He was a stout plethoric man, but had led a pretty regular life. He had for years enjoyed robust health, and until within a few weeks before I saw him, when he had a paralytic affection on the *left* side of the head and face. The physician, who was called in on this occasion, employed

of PARTIAL PALSY, for seven months. Her complaint, among many other effects, had produced a great distortion of countenance, which obstinately continued, after trying every means which medical skill could suggest. As the patient when she came to me, was then in tolerably good general health, I employed the electric *aura* and *friction*, from the 18th of September, 1816, to the 29th of the same month, with the greatest benefit. The countenance had by that time become quite natural, and she went home completely recovered.

Palsy of the Throat.

CASE 4.—Miss E. Barnfield, Chapel Street, Southampton, about twenty-three years of age, of a nervous temperament, and a spare habit, applied to me on the 22d of August, 1816. She stated, that she was then in tolerable health, but was able to take so little food from a difficulty of swallowing, that she wondered how her life could have been sustained. About a twelvemonth before she came to me, she

said, that while she was in the act of deglutition, something passed down her throat the wrong way, and almost chocked her. On that occasion, she coughed so much, and strained her throat to such a degree, as to bring on violent spasms. She immediately had the aid of Mr. M. an eminent surgeon of the place, who used every means to effect her cure, but which unfortunately failed. Since that time, she said she had not been able to swallow an ounce of food in an hour, nor drink a wine glass of water, but with the same violent efforts, and nearly with the same loss of time. Her meals, indeed, became her torture, and even when obliged to take medicine by sipping, she experienced the most painful suffering.

I employed the electric excitant in various modes, from the 22d of August, to the 29th of the same month, during which she made great progress towards recovery. The course was resumed on the 1st of September, and continued occasionally, with great success, till the 8th of November,

when she recovered the perfect power of *deglutition*, and was otherwise restored to health and strength.

Palsy, Right Arm, Hand and Fingers.

CASE 5.—Ann White, King Street, Southampton, about twenty-eight years of age, having been some time before suddenly siezed with giddiness, fell down. When she arose from her fall, she found that she had lost the use of her right hand and arm. She had been under two medical practitioners of great eminence, who tried every means of relief, but in vain. The affected arm was suspended in a sling, incapable of motion and apparently dead with cold—the fore finger being the only member she could at all move, and that she could only just stir. She also complained of a pain in the inner side of the arm, which at times was very severe.

As this case seemed to be complicated, with a morbid affection of the nerves, I felt it necessary to administer Electricity in

the mildest form, which I did occasionally from the 13th of August, till the 22d of October, during which time she made rather a slow progress towards amendment: but, before I dismissed her, I had the pleasure of knowing, that she was not only perfectly relieved of the acute and spasmodic pain of which she complained, but that she had also recovered the use of her right hand and fingers, which was of no little importance to one, whose very livelihood depended on her ability to work at her needle.

Palsy of the Finger and Thumb.

CASE 6.—H. Mellish, about twelve years of age, the son of a poor woman, servant in Russel Square, was last Summer sent to me by W. B. Esq. Surgeon to the Bloomsbury Dispensary. This complaint was a palsy of the thumb and fore finger of the right hand. The loss of this feeling and power, was not discovered till after the boy began to learn writing. It was

then his parents found out, that the defective action, had been occasioned by disease.

The employment of electrical vibrations, produced in this case, every benefit that even a parent could desire. The want of action, as well as the loss of feeling, was completely cured in the course of three weeks. By occasional attendance, the boy in that time, not only became perfectly able to hold his pen, but soon afterwards learnt to write a tolerable hand.

Palsy of the Hands.

CASE 7.—Elizabeth Langham, cook to Mrs. Moubray, then residing at Rose Hill Cottage, near Southampton, being afflicted with an affection in both hands, applied to me on the 17th August, 1816. She stated, that she had been for the last six months a great sufferer, from a stomach and bowel complaint, and had experienced frequent head-ache, nausea, and vomiting, with loss of appetite, and indigestion. She likewise, complained of costiveness, of great cold-

ness in the extremities, of disturbed sleep, of lethargic inactivity, and last of all, of a dead numbness in both her hands. The fingers had become motionless, the circulation obstructed, and by the sensation extending to the shoulders, the limbs were rendered wholly useless. She had recourse to the ordinary stimulus of liniments and embrocations, to purgatives and tonics, but without deriving the least advantage.

At first I chiefly directed my attention to restore the digestive organs by absorbents and mild aperients, to promote perspiration by piedeluvium and antimonials, preparatory to the administration of the electric vibrations. The latter course I commenced on the 3d of September, and repeated the application six times, between that day, and the 26th of the same month. This produced great relief—the general health was now much improved, and I again resumed the electric stimulant on the 10th of October, and on the 11th and 16th, with effects so immediately decisive, that

the patient was perfectly cured of every feeling and symptom of the disease. The immediate cause of the paralysis, the patient herself attributed to a sudden determination of blood to the head, occasioned by her being exposed to great fires in her daily occupation; but no doubt, that the irregular circulation itself might be occasioned by dyspepsia, checked perspiration, and constipation—to which her full habit, and a deprivation of air and exercise, must have greatly contributed.

CASE 8.—James Cleverly, near Burselden, Hampshire, aged thirty, of a cold temperament, and regular habits, was recommended by Dr. M. who had attended him at the commencement of his complaint. This patient had been in good circumstances, but from family discord and protracted law suits, was at last reduced to great poverty. This calamity preyed on his mind, affected his health, and brought on a sudden attack of palsy. One evening while drinking tea, he involuntarily let

fall his cup and saucer, both his hands dropped as useless, and hung to the joints without the power of motion. He obtained the aid of his medical friend, who employed the most powerful remedies, without any other benefit, than partially restoring his general health. He was confined ten months to bed, and when he so far recovered as to sit up, he found his legs were also partially affected with a paralysis and debility.

When he first applied to me, I observed that his hands and fingers were incapable of voluntary motion—extremely cold, and of a pale and lifeless appearance: there were, too, at the wrist of each, a protuberance, as large as a walnut, which yielded to the touch. He was so helpless, that he was brought to me daily by his brother in his cart. My hopes in this case, were not very sanguine. However, I commenced a course of Electricity on the 8th of October, 1816, directing the fluid through the stomach, spine, hands, and the

extremities. This was continued in various modes till the 12th, when he stated himself to be considerably better. The excitement was repeated almost daily till the 25th of November, when the patient was discharged as cured. Indeed, several days previous to this, he had fully recovered his health, strength, spirits, and activity. He could walk as well as ever he did, and was perfectly able to resume the exercise of shooting—to which he had been much accustomed in early life.

Palsy of the Lower Extremities.

CASE 9.—J. Lane, farmer at Elin, near Southampton, was recommended to me by Dr. H. This patient was in his forty-fourth year, of a sanguine temperament and regular habits. He stated to me, that from the age of twenty, he had experienced repeated attacks of gout. Some of these paroxysms had confined him to bed for months—but about five years before, he had experienced a very severe fit of the disorder, which suddenly shifted from the foot to the spine,

and in an hour after, the lower extremities became palsied. The legs were benumbed, and the feet cold and motionless; and which, from that time, had rendered him unable either to walk or stand, without the help of crutches. His digestion too, had suffered much from his repeated confinement and inability to use any exercise. In addition to these complaints, he was frequently siezed with violent convulsive fits, which generally attacked him in the night for an hour at a time, and recurred at the intervals of two or three weeks. The agonies he endured from these fits, were exceedingly great.

I commenced the treatment of this patient with absorbents and aperients—enforcing regimen as of more consequence to him, than medicines or Electricity. The last-mentioned, however, I administered to him from the 13th of August, in various modes, to the 25th of November; and as his attendance was pretty regular, but not daily, by that time, I had the satisfaction to see,

that he was not only restored to tolerable good health, but freed from the return of the convulsive fits, and had perfectly recovered the use of his legs. The last time I saw him, he came to bid me adieu. He had then walked from his house, a distance of five or six miles, without a stick, and alone, and he proposed to perform the same journey back again, on foot.

Palsy of the Bladder and Rectum.

CASE 10.—In the summer of 1817, M. M'Pherson, then residing at Brill Place, was sent to me by Dr. R. one of the Physicians of the Northern Dispensary. This poor man's tale of sufferings and misfortunes, was of the most afflicting kind. He stated, that he had been the victim of disease for more than five years, and having lost the use of his legs, he had spent his all, in attempting to procure relief from so heavy a calamity: Prior to his affliction, he followed the trade of a coach-smith; and having been hard at work in a dilapidated building, through the roof of which

the snow fell, he had imprudently stood on the moistened floor, the whole of the day, with shoes that admitted water. He was on the same evening siezed with extreme coldness in the feet, and very soon after, the toes became benumbed and incapable of motion. This paralytic feeling then extended to the ancles, and next gradually ascended to the knees; from thence to the hips and the spine. After some weeks, by the assistance of medical aid, he experienced a partial recovery, but could neither *walk* nor *stand*, without the support of crutches.

Having now become exceedingly weak through suffering, he was attacked by a still more distressing ailment—the involuntary and imperceptible discharge of the *bladder* and *intestines*, which rendered his state truly miserable to himself, as well as offensive to others. Finding all kind of medical treatment of no avail, he resolved to go to the hospital at Oxford, where he remained the usual period, and was then

discharged as *incurable*. Anxious to recover his health, and the use of his limbs, he was conveyed back to London, and then by a kind friend sent to the Middlesex, and subsequently to two other hospitals of the Metropolis, from each of which, he was dismissed as *incurable*. He was next sent to Margate, but the trial of sea-bathing again disappointed his hopes. On his return to town, he procured letters successively to three *different* Dispensaries, under the superintendance of several eminent medical men, but here again he was doomed to feel the poignancy of disappointment, for his case was abandoned as hopeless.

He now became a patient of Dr. R's. who had recourse to *nux vomica*, which had obtained great reputation on the Continent, in the cure of *palsy*. This, however, disappointed every expectation entertained of its peculiar and powerful action on the nervous system. Strong convulsions were indeed produced by this remedy,

but no beneficial effects resulted from its use.

Such is the history of the case, up to the time that Dr. R. placed this patient under my care. He appeared about fifty years of age, of a sallow complexion, much emaciated, and supported on crutches—without which, indeed, he could neither *move* nor *stand*. He said he had been *electrified before*, but as he had derived no relief from its application, and the *shocks* were *violent* and distressing, he had desisted from them now. I commenced with the milder vibrations from the spine to the extremities, increasing the strength of the stimulus as I saw necessary. Immediately after the *first* application, the patient expressed himself much satisfied with the agreeable process, and the comfortable feelings he experienced. On the *second* application, he felt a tingling, he said, all along both legs and feet. On the *third*, he perceived he could move the limbs with less difficulty. On the *fourth*, he stated,

that the soles of his feet felt rather *sore* and *tender*. I then varied my plan, and passed the electric fluid from the Os-sacrum, to the Os-pubis, and through the abdomen. On the fifth application, he said, he now found his legs not so dead to a sense of feeling and warmth. When he came again the next time, he assured me, that he never felt such a glow of heat in the lower extremities, since the first attack of his disorder. This sensation of warmth continued night and day, the circulation being so fully restored, that no further stimulus seemed to be required

The contraction of the limb, however, not being completely removed, he persevered in its use a week longer, when he declared before a medical friend who casually called on me, that he was then perfectly relieved from the *paralysis* of the *bladder* and *rectum*, and that he now possessed the full and vigorous power of retention and expulsion of the urine and fæces. The lameness still continuing with

little amendment, he was electrified three and four times a week, for a month longer, with much advantage—the motion of the limbs became more quick and natural, but still he could not walk any distance without his crutches. Finding he did not recover strength as I expected, I enquired of him, what kind of diet he used? When the poor man acknowledged, that the cause of his weakness, was *want of food.* 'I am sure, Sir,' said he, 'If I had but food enough to satisfy my hunger, I should gain strength, but the want of bread undoes all the good I receive from your exertions.'—Having ascertained his circumstances to have been truly represented, some friends contributed to the relief of his necessities, and a short time afterwards, he went to the workhouse.

This unfortunate man was benefited by electrical treatment, as far as he could be, while under the privation of nutriment—as necessary to health, as the air we breathe. Had providence blessed him with

the means of recovering his muscular power, the cure of his *lameness*, would have been as *complete* and *permanent*, as that of his other disorders. I have seen him repeatedly since the electrical course, and he always assured me, that he has constantly remained free from *those* symptoms of his former severe and complicated complaints.

CASE 11.—J. W. A. Esq. of Bernard Street, Russel Square, about forty years of age, called on me with his medical friend, to take my opinion on the applicability of Electricity to his case, which was that of a *paralysis of the bladder*, attended with *very peculiar* circumstances. This gentleman stated, that about four years ago, he had been on a voyage to the North of Europe, where he had been siezed with a severe cold, which terminated in a palsy of the lower extremities. By the most active and powerful remedies, he had experienced a partial recovery, but still he had to complain of a benumbed deadness of feeling

in the feet, of extreme coldness, and of the other distressing disorder just mentioned. Blisters to the Os-sacrum, and *every other* stimulant, had been employed under the *direction* of *several* eminent practitioners, but without success. Indeed he had so long sought relief in vain, by every means prescribed, that he now despaired, he said, of a cure.

He commenced an electrical course on the 5th of May, 1818, and continued it pretty regularly to the middle of June following; with decided *benefit* as to the palsy of the lower extremities, but without deriving any perceptible advantage in other respects. The electric stimulus had here to contend with combined and formidable difficulties; for the patient had been long suffering from constipation in a very great degree, was extremely inattentive to diet, and from this constitutional ailment, he continued to suffer after he left me as a patient. He went out of town, and on his return favoured me with a call, to inform

me, that he had been *perfectly cured* of the paralysis, but that the torpor of the bowels, and irritation of the bladder, still continued in some degree to trouble him.

Palsy of one Side of the Body.

CASE 12.—A female infant, child of Mrs. Clarke, of Bridge Street, Southampton, was recommended to me by Dr. H. for an attack of palsy, which she had experienced two months before. The child was about three years of age, and the mother stated to me, that she had been suddenly siezed with the paralytic affection, on the morning of the 7th May, 1816. The physician, who was called in, ordered fomentations, embrocations, &c. but the disease continued unremoved. The foot was much contracted, and felt extremely cold—the hand hung down wholly incapable of motion.

On the 9th of July, I began the application of Electricity, and on the sixth day afterwards, the contraction of the foot was

perfectly removed, and her hand had so completely recovered the natural power of motion, that she could firmly grasp any thing placed within her reach.

CASE 13.—A little girl, of the name of Everard, about 10 years of age, of a sallow complexion, and much emaciated, was sent to me by W. B. Esq. Surgeon of the Bloomsbury Dispensary, (under whose care she had been placed a short time) for the purpose of my administering Electricity to her. Her mother, who resided in Gilt-spur Street, informed me, that she had been suddenly siezed with a cold shivering, when she was immediately put to bed, and rubbed for some time, but without obtaining the least warmth. On the following day, the whole of the right side was affected —her head dropt on her shoulder—the arms hung down, without the power of motion, and the right leg was dragged on the ground in walking. The face too, was distorted, the tongue protruded, and a co-

pious discharge of saliva, flowed from the corner of the mouth.

Such was her state when she came to me. On examining the child, I was led to suspect, from the apparent symptoms, as well as from her own account, that her disorder was occasioned by worms. Indeed, the mother admitted, that prior to the attack, the child had voided a vast number of them. Vermifuge medicines were now administered, and the patient, voided a vast quantity of *ascarides*. She was then electrified almost daily for a month, in various modes, when the palsy was so perfectly cured, that she enjoyed an uninterrupted state of health, for the space of a twelvemonth. About this time, she had another slight attack of her complaint, from the same cause, when I again adopted a similar treatment, which produced the same beneficial result.

This child, during the summer, had been pretty much indulged with sweet-

meats, unripe fruit, and other unwholesome food, which occasioned a relapse, from which she was again so perfectly recovered, that she has not only enjoyed a state of good *general health*, but has also recovered her *natural quickness of mind*, and retention of memory. This patient, was the second time under my care about one year ago.

CASE 14.—Mr. D. Lamb's Conduit Street, about thirty years of age, of a phlegmatic temperament, and sallow complexion, was recommended the use of Electricity by Dr. B. About sixteen weeks before, he had been siezed with a sudden attack of palsy, and was affected in nearly a similar way to the patient in the preceding case. The face was distorted—the side cold and benumbed—the hands divested of the power of voluntary motion, and the leg was dragged in walking. The spirits were much affected, and his countenance marked by despondency. Blisters and purgatives had been employed by

Dr. B. but without producing a beneficial change on the palsy.

I commenced the course of Electricity on the 24th of December, 1817, and continued it occasionally to the 2d of February following, when he was so far recovered, as not to require any further application. I have seen him several times since, and particularly observed his walk, which evinced no remains whatever of his former malady. In this case, I had every reason to suspect, that a *bilious derangement* had induced the disease, which had been previously greatly relieved, by the judicious treatment of Dr. B. from whose well known professional skill, every practicable advantage, may in all cases, be expected.

CASE 15.—Thos. Bennet, Red Lion Street, Spital Fields, about thirty-six years of age, a patient of the General Dispensary, Aldersgate, was recommended by Dr. L. to my care, on the 25th June, 1816. This case was similar to the last, with this differ-

ence, that the disorder was occasioned by *dyspepsia*. The predominant irritation of his stomach, produced so great a degree of general irritability, that his whole nervous system, was affected. The whole side had become paralyzed—a hurry of spirits marked his manner—and in this unhappy state, he had then continued for several weeks. As he had been bled, cupped, and blistered, I recommended alkalines and aperients, which *allayed* the *irritation*, and administered *Electricity*, *which cured the palsy*, within a fortnight after the first application, though he attended me but a few times.

I then advised him to give up his business of a baker, as the sudden and frequent transitions from heat to cold, to which it daily exposed him, were so prejudicial to his health. I also recommended to him a strict attention to regimen, to substitute animal for vegetable food, and to go into the country for the benefit of pure air.

CASE 16.—Mrs. M—, of Basinghall Street, a lady about *eighty years* of age, was sent to me by her son-in-law, in order to consult me on her case. She was of a plethoric habit, and had some months before, a severe attack of hemiplegia, subsequent to a serious fit of apoplexy. She was copiously bled by her medical attendant, which at that time saved her life, and since then, she had been obliged to have recourse to cupping. Her right side was *totally powerless*, and though she had so far recovered her general health, as to require no further aid from medicine; yet she was *so feeble as not to be able to stand*, and was obliged to be conveyed in a chair, from her coach to my room. As the sensibility of this patient was not much diminished, it appeared to me, that the remaining torpor of the nervous system would be best subdued, by the mildest electrical excitement.

I commenced the treatment of her case, by passing the current of electric air, from

the upper to the lower extremities. The first operation was tried on the 25th of April, 1818, and was repeated occasionally till the 2d of June following, when the patient had so far recovered her strength, as to be able to walk *two miles* with the assistance of her servant, which was a great distance for her. She then went into the country, having not only recovered the *use* of *her hand and foot*, but also of her *intellectual capacity*, which had been evidently much impaired.

On her return to town, she called on me again, in consequence of her stomach having been disordered by *eating hard and indigestible food;* but she had not had any relapse of her complaint. Unfortunately, however for my aged patient, she was left to the care of servants, who paid no attention to her regimen. She was in consequence, only a few weeks afterwards, attacked with a fit of apoplexy, which terminated her advanced life. As she had before *made blood so freely*, I am persuaded, that

a *low diet would have prolonged her existence*, whereas the contrary course proved fatal.

CASE 17.—Mr. Sands, hair-dresser, Southampton, about forty years of age, of a very spare habit, and of a nervous temperament, had been siezed with palsy about *ten years* before, and which he stated to have been preceded by great giddiness, and other distressing symptoms. He had been attended by Drs. W. and M. two eminent physicians of the place, and was by their treatment so far restored to health, as to be able to prosecute his business. His chief object in applying to me, was to obtain relief from the *great difficulty he felt* in making *any* effort of muscular motion, with the affected limb. The left leg, from the spine to the toe, felt as if drawn up—the constriction appeared to be very great, and was attended with *considerable diminution* of heat, in that side of the body. The hand and arm were not so much affected with stiffness, as with an ex-

treme degree of coldness, which in winter rendered them benumbed and powerless.

On the 10th of August, 1816, he was for the first time electrified by mild vibrations, when he felt a glow of heat, such as he had never experienced, since he had been attacked with his disorder. On the 14th he complained of pain in the muscles of the thigh extending down to the knee. On the following day, he thought the constriction lessened. On the 23d after the fifth application, he said he felt warmer in the limb, and more free in his walk. The sixth time he was much warmer and stronger—and from this period, to the 9th of November, during an electrical course of *occasional* attendances, this patient received perfect relief from the effects of a disease, which had distressed him for more than *ten years*.

CASE 18.—Captain G—, R. N. about fifty years of age, of robust form and plethoric habit, had been *twenty years ago*,

attacked with palsy on the right side. Bleeding, both general and topical, together with a course of purgatives, had mitigated the disease, in its earlier stage, but he still continued to experience *defective sensibility* and *action*. He visited London, and went through a regular course of *Electricity by shocks*, but without deriving any advantage whatever. Soon after he went abroad upon active service, and though he was stationed for some years in a hot climate, the *palsied feeling* of coldness, *never* left him. On his return home, he continued to have recourse to various means for obtaining relief, which having uniformily failed, he applied to me for my opinion of his case, which had indeed by that time, assumed a hopeless character. The symptoms he then laboured under, were a great *numbness* in the whole side, with an *internal feeling* of *chilling coldness*. The whole of the *leg* and *arm* affected were *exceedingly stiff*—and there was a loss of *feeling*, as well as of *voluntary motion*.

On the 25th of September, the first application was made by friction. From that time, to the 2nd of October, I used sparks and also vibrations; when contrary to my expectations, the patient was perfectly relieved from the effects of a disorder which from its *long protracted duration*, had been deemed *incurable*, by his medical advisers. About *two years* afterwards, I had the pleasure of seeing this gentleman in town, when he expressed his great satisfaction, in having been so decisively benefited by my treatment; and it ought to be remarked, that two winters had then passed away, without the slightest re-currence of his complaint.

This is as singular an instance of a complete and permanent cure of this disorder, as ever fell under my observation. In general, after one year, palsy is seldom cured though great relief may be obtained, by *persevering* in the proper use of the remedy. Much however, will depend on the operation of that cause, which produced

the secondary disease. The great point, in such a case, is to ascertain the cause of disorder, that it may be more certainly combated.

The instances, in which the too sanguine hopes of the afflicted have been disappointed, were *those*, in which the disorder had been suffered *to go* on for years, under a course of *improper treatment*, without *due attention to regimen*. *Change of structure* then takes place.—the palsied limb *becomes wasted*, and though sensibility may possibly be restored and a further *decay* of *substance prevented*—yet the *vigorous* use of the *muscular power*, and its *ready obedience* to the *volition* of the *mind*, has seldom been fully regained.

SPASM.

Under this Order, various Diseases of the Nervous System may be comprehended.

I. *Hysterics.*

CASE 19.—Mrs. Ball came to me in the latter end of July, 1816, to obtain relief of an hysteric affection. She had been subject to fits some months, and though she had, during the whole time, the advantage of careful and skilful treatment by Drs. M. and H. yet the violence of her disorder, continued without any abatement. She could give no account of its origin, but the following were indications of her ordinary feelings. *Faintness*, a *rising in the throat*, as if she were *choked*, and convulsions, in which she at times *laughed*, at others, *cried*, or *screamed aloud* in such a manner, as alarmed and terrified all around her; and when she came to herself, she

felt wholly exhausted. The attack of these fits not being periodical, I was led at first to suppose, they originated in the peculiar delicacy of her constitution, her languid circulation, and her sedentary habits.

I therefore employed Electricity in its mildest forms, and having made particular enquiries of the patient, I had reason to suspect, after a few applications, that acidity of the stomach, and irritation of the bowels, occasioned by worms, was the chief cause of all her sufferings. I therefore directed her to have recourse to absorbents, and having passed the Electricity through the bowels, I soon found by her immediately voiding numerous worms (ascarides) that my conjecture was well founded. The patient then perceptibly but gradually got better, and recovered at last her perfect health.

CASE 20.—Mrs. Turtle, Queen Street, Southampton, about thirty years of age, of a nervous temperament, and much ema-

ciated, came to consult me on her complaint. She stated, that she had been safely delivered on the 28th of November, 1815, and was soon afterwards restored to her usual health. One day, she put her infant in the cradle, and covered her with the clothes, when she left her for a short time to look after her domestic concerns. On her return to the room, she went to the cradle to take up the infant, when to her undescribable horror, she found her child *lifeless!* Shocked, and almost petrified with this heart-rending spectacle, she stood for a time motionless and breathless. When she recovered the powers of respiration and voice, she screamed aloud, fell into violent convulsions, and laughed and cried alternately—in short, she became delirious and frantic, for several days. The hysteric fits returned with a rapidity that alarmed her husband and friends, for her safety. Medical men were in constant attendance, and every means were prescribed and used, which their united counsel directed, but without any effect in soothing her distracted

mind. Her general health now became greatly impaired, her appetite and digestion suffered much, and the stomach and bowels were diseased. The symptom which most distressed her, was a constant painful feeling of the throat in breathing, as well as swallowing, which she described as a 'lump in her throat.'

Supposing this affection to be purely nervous, and the dyspepsia a consequence of defective vitality, I recommended the use of mild aperients, while I employed Electricity in friction and vibration to the diseased parts, and also as a constitutional remedy, from the 29th of July, to the 15th of August, but with very little advantage. She then discontinued her attendance, and went through a course of mercurials, with little or no benefit. She came to me again on the 6th of September, and from the statement she then made, I was led to apprehend, from the disordered state of her stomach and bowels, and from other *peculiar* symptoms, an irritation from worms,

as in the last case. I then changed my mode, and on the same day passed many vibrations through the stomach and bowels, which not only produced copious evacuations, but to the astonishment of the patient, the voidance also of several long pieces of worms, about six, eight, and ten inches, in length. From this operation, she *immediately experienced* a *slight* relief from the distressing complaint in her throat. On the 10th of September, I resumed the application with greater force, and on the 12th, she passed four, large, dead, but whole worms. On the 14th, she again voided more of them, and continued to do so, till the 17th of the month. The pains in the stomach and bowels had now subsided, but she still continued to be distressed by the irritation of the throat, and hoarseness. Electricity was then for a few days omitted, and again resumed, with such decided benefit to the patient, that I now dismissed her with strict injunctions to attend to regimen, to use exercise, and above all things, to detach her mind from gloomy reflections.

She attended to my advice, and before I left Southampton, she was recovered from her complaint in the *throat*, and though still weak, the *fits* had entirely left her.

Numerous cases of *Hysterics* have occurred in my practice, which have been successfully treated by Electricity; and particularly where connected with those *delicate* and *painful* disorders, peculiar to females—a few of which will be glanced at, under the head of OBSTRUCTION. The two following cases, are noticed, more for their singularity, than for their comparative importance.

Cramp.

CASE 19.—An elderly female, who was housekeeper at an hotel in the west end of the town, came to me, with a friend of her own, who was then my patient, in order to have my opinion on her case. She stated, that she had been for years a great sufferer from cramp in her legs. This painful affection had continued to gain

upon her, notwithstanding she had constantly had the best advice, and had *uniformly* followed the direction of the physicians. Of the latter part of her statement I had some doubts, as by her own account, I found her habits were by no means friendly to health. On touching the affected parts, the flesh of both the lower limbs was knotty, like hard balls, which resisted pressure. She was also subject to cramp in both hands and arms, but these were not so affected.

She was anxious to try Electricity, and I employed it rather as an experiment, knowing that I had to contend with a disordered state of stomach and bowels, and what was worst of all, with the *force of a habit*, not easily to be overcome. Notwithstanding, however, all these disadvantages, I had the satisfaction to find in a few days, the patient considerably relieved; and in the following week, both herself and friend reported to me personally, that she was then quite free from her complaint.

This lady assured me, in case of a relapse, she should visit me again; but as I have never since seen her, nor heard from her, I presume that she continues well.

Spasm.

CASE 20.—A stout young woman, living at Southampton, of twenty-five years of age, and to all appearance healthy, came to request my assistance for a violent pain under which she laboured, The seat of her disorder was on the right side of the body, under the lower rib. As she was then in great agony, I immediately placed her in the insulated chair, and obtained a few sparks from the part for about *two minutes* only, when she became somewhat faint, but she very soon after recovered from the syncope. She now declared, that she felt perfectly free from that excruciating pain, which she had suffered during the whole of the preceding night. This patient being very plethoric, I advised her to go to Mr. K. Surgeon, who bled her pretty freely. She called on me in a few days after, to ac-

knowledge her obligation, when she informed me, she was completely restored to her usual good health.

In many cases, of disorders in the stomach, liver, and bowels, as well as in female irregularities, both cramp and spasm have been found as existing symptoms—these will be noticed under their proper heads—and also another *malady*, of no slight suffering, HEAD-ACHE.

Epileptic Fits.

This disorder, next to madness, is one of the most dreadful which can afflict mankind: hence it was supposed by the ancients to be produced by supernatural agency—but we in this enlightened age stand in need of no such solution, for the disease can now be accurately traced to various causes, in only a few of which, Electricity is applicable.

CASE 21.—W. Young, Queen Street, Southampton, of twenty-three years of age,

of a nervous temperament, pale countenance, and much emaciated, had been residing for some time at Guernsey, but the climate not agreeing with him, he became indisposed, and left the island. About a year after, he was frequently attacked with *hysteric fits*, which, though he had the best medical advice, continued for a considerable time to afflict him. This affection, however, at last subsided, when he was regularly siezed with *epileptic fits* at stated periods. His account of the symptoms of his disorder, was—that he felt a drowsy heaviness in the head, and was unwilling to move at all—that he was losing his memory very fast; and, that both his hearing and sight, had become much impaired. When these fits attacked him, he fell down suddenly, as if terrified by some horrible object—he writhed and twisted, frothing at the mouth, shrieking, and gnashing his teeth, while his eyes, all the time, remained open. When these fits were on him, he was so strongly convulsed, that several persons could not hold him. When

he recovered, he had no recollection whatever, of any thing that had passed.

Having been under the care of several medical gentlemen, who had formed various opinions on his case, and had treated him accordingly, without any benefit—he was now determined to submit to my directions. Supposing his malady to have arisen from a violent nervous affection, I recommended very little medicine, and employed Electricity in various modes, from the 9th to the 21st of August. He now reported to me, that he had experienced no pain whatever since the first application, that the fit had not returned at the usual period, but that he was still troubled with giddiness in the head. The remedy was again repeated from the 21st to the 30th of August, when his general health appeared from the improved state of the tongue, pulse, and complexion, greatly restored—and still, no fit had returned. He then desisted from electrical applications till the 13th of September, and had the last on the 16th, when

he reported himself, to be quite free from every feeling that could indicate disease, and was in all respects, perfectly well. On the December following, he called on me in London, to express his gratitude for his recovery, when he told me, that up to that time, he had not had the slightest return of his old complaint, nor was he at all apprehensive of such a misfortune, as he now felt himself quite another person, in every respect. He said, he had now to attend to a business in which he had recently engaged, and though the speculation was very hazardous, and required constant and great exertion of mind, yet he felt himself, perfectly competent to the undertaking.

CASE 22.—Diana Osman, living at Marchwood, near Southampton, was a stout young woman of twenty-two years of age, and of a plethoric habit. She had been subject to severe epileptic fits, for more than fifteen months. The cause she attributed to a fright she had, at a time when she was particularly nervous. Her

general health had been previously good, but was then much impaired by her affliction. The symptoms were much the same as in the last case, but the cause arose here from obstruction, which produced extreme irratibility.

The patient was subjected to an electric course, from the 8th to the 20th of August, when she found her general health better, and her feelings comfortable. From the first electrical application to this time, she had not had any return of the fits, though before, they were very frequent in their unwelcome visits. On the 24th she had a fit, but in a very slight degree. She then resumed the electrical applications, and repeated them thirteen times, from the 27th of August, to the 12th of September, when she declared herself to be perfectly cured. In two months afterwards, she called upon me, in a state of excellent health. She stated, that she had not had then the slightest return of the fits, though she had

several times been alarmed and frightened by circumstances which recently had happened,

CASE 23.—A. Taylor, recommended to me by letter from a Surgeon and Apothecary, at the west end of the town. The patient was about forty-five years of age, subject to a stomach and bowel complaint, and within a few months past, he had been seized with epileptic fits in the middle of the night, while fast asleep. These attacks became alarming from their *frequency* and *severity;* and the mind of the patient had suffered so much, that he could scarcely recollect any thing, while his body had become so debilitated from the *violence* of his convulsions, that he was *wholly unable* to work. This patient being still under the care of his own medical attendant, of course I confined myself exclusively to the application of Electricity, but that proved of decided benefit. A few applications removed the complaint, and

sometime afterwards he called to say, he had no return whatever of his fits.

Many similar, and aggravated cases, have also been successfully treated by Galvanism. When epilepsy arises from malconformation, or any organic disease, then little can be expected from the electrical agency. But the question can be best determined by experiment, as I have known instances, in which, though little was expected from the remedy, yet much more was obtained from its judicious application, than from all the known means in common use.

St. Vitus's Dance.

I have had few instances of this singular disorder: but in the treatment of these, Electricity has proved highly beneficial. The following is perhaps, the only case within my knowledge, which deserves particular notice.

CASE 24.—Miss B—n, about twenty years of age, of a robust form, and exceedingly nervous, was recommended to me by Dr. T. under whose care she had been placed for some months. The patient was unable to speak so as to be understood —she was much convulsed—her countenance distorted—her tongue hung out of her mouth, and a great deal of frothy saliva was discharged. Her mother, who accompanied her, stated the following particulars: that her daughter had been about *two years* in her present state, during which she had received the best medical assistance, and that *every* known means had been resorted to in vain; that her general health still continued extremely bad;—that her fits were *unremitting* night and day, and that of course, she could at no time, have any refreshing rest. The muscles of the arms were more violently agitated than those of the legs—the head revolved by a sudden startling motion, and a rattling noise was heard from her throat, when at-

tempting to speak, like that proceeding from suffocation.

To restore the general health, I employed *Galvanism*, for a few weeks, which produced the most beneficial effects, and then Electricity in the direction of the spine, &c. In six weeks, the patient was perfectly cured of *every ailment*. She now became *corpulent*, and was enabled to work at her needle, which she had not done for *two* years. About two months after her recovery she called again to inform me, that she had experienced a slight relapse of her complaint, which she attributed to an *obstruction* from cold, to her *close application* to needle-work, and to her *peculiar sufferings* of *mind*, occasioned by some very distressing family affairs. She then went through the same process as before, and was a *second time*, *restored* to perfect health. Some months now elapsed, before she visited me again, when she called to inform me, that she had experienced another slight relapse of her disorder—for

which she took blame to herself, in not having paid sufficient attention to my directions, respecting *diet*, *air*, and *exercise*. A few applications relieved the complaint. I then recommended her to go into the country, and on her return to call on me again if she should find it necessary, but from that time, I have heard nothing more of her.

I am well aware, that medical means will frequently effect a cure in this disorder, where it is produced by irritation in the primæ viæ, but where the nervous system is deeply and *primarily* affected, no remedy whatever, can so certainly or speedily, cure *St. Vitus's Dance*, as the *Electric fluid*, properly employed.

Acute Affection of the Nerves.

CASE 25.—P—. Esq. then residing at Mr. Gilmore's, Chymist, Southampton, came to me on the 4th day of November, 1816, to make a trial of Electricity in his case, which was a *morbid affection*, in a

branch of the fifth pair of nerves. This painful complaint, called Tic doloureux, had siezed him about six months before, which he attributed to the *extraction of a decayed tooth*, from the right jaw—the spasmodic feelings, which he laboured under, were on the left cheek. Dr. W. having paid every attention to this case, and tried every remedy in vain, little benefit seemed to be expected from any application of mine, especially as the patient was an *old man*, still in a *bad* state of health, and too *peevishly restless*, to give any remedy a fair trial. The recurrence of the spasm was so quick, that it took place every *three or four minutes*, day and night; and these *violent* paroxysms, were only in some degree relieved, by his *forcibly closing* the teeth of the right jaw. His face was distorted and convulsed, and he could only converse in abrupt and broken sentences. Dr. W—, who witnessed my operation, observed, that when I insulated the patient, and employed a point for ten minutes, he had *no return* of the spasm; but when the

machine *ceased* to work, it *recurred* again. On the 5th, the gentleman said he was a great deal better, the spasm having returned but a few times, during the preceding day and night. The remedy was again repeated on the 6th, in the morning, for the *third*, and in the evening, for the *fourth* time. The patient was at length greatly improved; and on the 7th, after the *fifth* application, he became *free* from the spasm altogether. He *slept* well, was able to *converse freely*, and was in high spirits, anticipating a perfect cure. On the 8th, after the *sixth* application, he considered himself *completely restored*. On the 9th, he took a short journey in his open carriage, and on his return, was exposed to a cold easterly wind, accompanied with a storm of hail and sleet, without feeling the least return of his complaint. This gentleman, soon after left Southampton, perfectly free from every symptom of his disorder.

CASE 26.—A respectable young female, about twenty-five years of age, of a

plethoric habit, was recommended by Mr. M. Surgeon. She came to me attended by Mr. M's. assistant, who not being aware of her case, stated, that she had laboured, for some time past, under a very severe rheumatic attack. This, however, was not correct, for her real complaint proved to be, a morbid affection of the nerves of the hand and arm. The pain, which was extremely acute, and spasmodic, frequently and suddenly, darted from the upper, to the lower part of the limb. Mr. M. who has had occasion to direct his professional attention to cases of Tic doloureux, and to whose skill, many patients of that class are indebted for their recovery, had failed to succeed in this instance.

In the space of a fortnight, from the time I commenced the electric course, the patient was perfectly cured, of a disorder which had deprived her of the use of her left arm, for some months. Nearly twelve months afterwards, I saw Mr. M, who informed me, that the patient continued to

enjoy good health, and had not experienced the slightest return of her complaint

The following is one of the most extraordinary cases, of a morbid affection of the nerves, which I have met with.

CASE 27.—Mrs. H——, a respectable old lady, residing in East Street, Southampton, came to me, attended by her married daughter, who was herself also an invalid. Mrs. H. had in early life enjoyed tolerable health, but since her confinement by family cares and age, she had suffered much from an indisposition arising from a disordered state of the nervous system. The disease she was then labouring under, was an acute affection of the nerves about the lower part of the spine, which suddenly shot to the under part of the shoulder blade, and frequently extended to the arm and even to the ends of the right-hand fingers. She had enjoyed the advantage of having every kind of medical aid, without ever experiencing, even the smallest

temporary relief; and had tried every kind of remedy, that the *regular* and *irregular* practitioner had advised, to no purpose. She attributed the *origin* of her complaint to the *severity* of her accouchement, *thirty years* previous.

Having directed her to attend to the state of her digestive organs, I commenced the employment of Electricity on the 3d of of September, 1816, by insulation and vibration, directed to the affected parts, and so soon as the 7th of the month, though otherwise not better, she *felt* less pain in the back. She continued the application occasionally till the 30th, during which time, she *gradually* got better. She now waited to observe the effects produced, but not finding herself *quite* relieved, came to me again on the 16th of October, and continued the Electricity for some days, when she reported herself to be *quite free* from every symptom of the complaint. She had also improved much in her general health, which no doubt had been greatly impaired by the malady, from which she declared,

she had not been even *one day free*, for the space of *thirty years*.

Though I have not met with many cases of this kind, in which I have been unsuccessful, I must candidly say, that I have been *often* disappointed, in the cure of this dreadful disorder. One reason of this failure, may perhaps be found in the opinion entertained of its being only a *local affection*, and the treatment required *merely topical*. Whereas, if the nerves themselves be affected only by sympathy, and a *morbid change* in the brain, *occasions* the disorder, *very little* can be expected from any *local* excitant. The *division* of the nerve, which has *often proved useless*, clearly indicates, that nothing short of a *constitutional* treatment, can *cure* the disease. I beg here to refer the intelligent reader, to an admirable work of Dr. Armstrong's, on this most important subject, see his Practical Illustrations on Typhus Fevers, &c. 3d Edition, page 442. This book is deservedly held in the highest estimation by medical men.

Hypochondria—Melancholy.

CASE 28.—A young gentleman of fortune, who, when young, had been placed at a public seminary, where unfortunately he was seduced by his associates to the practice of a vice, as fatal to his peace of mind, as injurious to his health. This laid the foundation for a nervous disorder, which proved to him a source of protracted suffering. His *mental* powers became impaired, especially his *memory*. But, what was worst of all, his *fancy* dwelt for ever on imaginary evils, while *increasing* timidity and gloom, led him to banish himself from all society. His *health* daily declined, while a *depression* of spirits, and a *fretfulness* of temper, concurred to render him truly miserable.

In process of time, by a salutary change of habits, he *partially* recovered, and having become studious, and of a religious turn of thinking, he became the subject of a *new* kind of suffering. The terrors of future punishment now continually haunted

his fancy, enervated his powers, and embittered his existence. Under the pressure of these feelings he was ready to sink, when a ray of hope entered his mind, and so far dissipated despair, that for a while he felt somewhat recovered. Subsequent events, however, arising from family affliction, again, and again, brought him into a state of *extreme nervous despondency*. He frequently supposed himself so ill, as to be on the point of death, when a postman's rap at the door, would instantly banish the delusion. The disappointment of anticipated pleasure, filled him with *rage*, or overwhelmed him with *grief*. With all these perturbations of mind, he felt the whole train of dyspeptic affections, which, from their severity, led him at last to suspect, that he laboured under a *disordered state* of the nervous system.

The spell was now broken—he commenced a course of treatment under a medical friend of mine, who prescribed *diet* more than medicine. He was then recom-

mended to me, and by the *use of Electricity for some weeks*, together with air and exercise, he *fully regained* his health, constitutional *vigour*, and *spirits*. His *mental energy* also, was so *completely restored*, that he soon became, and still remains, an active, and useful member of society.

CASE 29.—Among the many cases of this deplorable malady, which I have had occasion to witness, I have seldom, if ever, met with one more distressing, than the following. In the year 1803, during my residence near *Launceston*, in *Cornwall*, Mr. Yeo, an opulent farmer, who resided in that neighbourhood, came to consult me, at the request of a friend of his own. He was about fifty years of age, of a melancholy temperament, and of a middle size. He informed me, that fourteen years before, he had addicted himself to intoxication, and that he had not for the term of seven years, gone sober to bed; yet such was his constitutional strength, that he had still been able to attend to his agricultural

concerns. He told me, that one day, from motives of curiosity, he had gone to hear a popular minister, who preached a sermon on the 'Sin of Drunkenness, and its dreadful consequences.' This discourse made so deep an impression on his mind, that he instantly resolved to leave off for ever that hateful vice. He kept to his determination, for he said, he had never since tasted either spirits, wine, or even any malt liquor. He was now become a creature of reflection, and while under great *mental* and *nervous* depression, was indulging in a walk on a Summer's evening; when casting his eyes on the ground, he imagined he perceived something shining, and on stooping to pick it up, supposed that he had been bitten by a serpent. He immediately put his finger into his mouth, and while sucking the supposed venom from the part, he felt a sudden thrill through his whole frame—his head became confused, and his heart palpitated violently.

From that moment he never ceased

for six long years, from imagining himself to be *possessed* of a *demon*. This strange conceit was productive of the most distressing consequences,—in the day, he was constantly haunted with melancholy apprehensions; and broken rest and distracted sleep, rendered his nights terrific. Thus did the evils which his disordered fancy had conjured up, so harass and agitate his mind, that a *sense of religion alone, restrained* him *frequently* from *committing suicide*. In order that he might be the better enabled to submit the whole of his singular case to the judgment of medical men, he kept a journal, which he called his *book of daily sufferings*. He had consulted, when I saw him, the first physicians in the county—he had also been attended by several surgeons and apothecaries, and had frequently had recourse to empirics, but without the least benefit to his distracted mind. Medicines of various kinds, change of air, of place, and all other means of recovery which could be devised, were successively tried in vain.

When he applied to me, he described his complaint, as an obtuse pain in the head, and in the region of the heart. Regarding his extraordinary case, as one of settled hypochondria, I determined not to sport with his feelings, by treating his disorder as a chimera of the brain. By sympathising with him, I gained his confidence, and he determined to try the effects of Electricity. I appointed my judicious medical friend, Dr. C—, to attend us; and after a minute examination, we found no cause to suspect the presence of any dyspeptic or hepatic disease, nor of any *organic lesion* of the heart. We then proceeded to pass the electric fluid in a vibratory current, through the disordered parts, which produced an immediate effect on the patient. In a few minutes he exclaimed, that he was relieved from the torture he had so long endured. His countenance brightened into cheerfulness—he ate a hearty supper with us, slept soundly the *whole* night, and after awaking refreshed in the morning, declared

to us, his conviction of a decided and happy change having taken place.

The application was repeated on the two following days, after which the patient was so fully satisfied of his recovery, that he went home in *confidence*, to announce to his friends his singular cure. I was subsequently in the habit of hearing from him, and occasionally seeing him, for several years ; I have therefore only to add, that he had not during that period the slightest return of his complaint. I should, perhaps, have before observed, that on *any other* subject of conversation than his disorder, Mr. Yeo was at all times perfectly calm and collected; and in the management of his ordinary affairs, *evinced much discretion* and *ability*. In what manner the electrical stimulus produced so instantaneous a benefit, I cannot determine. I give only the *facts*, which are more valuable than a thousand *theories*.

BLINDNESS,

Occasioned by Palsy of the Optic Nerves.

But few cases have fallen under my observation, where defective vision had been so successfully treated by *Electricity*, as by *Galvanism*. This will therefore be further adverted to under the heads of GALVANISM and GUTTA SERENA. The loss of sight occasioned by palsy, is one of the most hopeless diseases of the nervous system. *Few*, indeed, are the instances of perfect recovery in cases of this kind, nor are there any other affections in the organs of sense, in which the ordinary treatment has *more frequently* failed, than in this malady. But all is not lost to the blind—hope *may still be indulged*, where no organic derangement has taken place, and where the nerves have not suffered from this morbid change; if their capabilities *only* have been affected, either by suppression of their in-

herent energy, or a diminution of power by exhaustion or defective excitability, the afflicted need not despair. I shall now give only two cases of this kind, in which the employment of Electricity was productive of the most decided and permanent benefit.

CASE 30.—John Shepherd, High Street, Southampton, recommended by Mr. Jacobs, Grocer; about fifty years of age, tall, of a spare habit, and nervous temperament. This patient had for years enjoyed a robust state of health. and a great flow of spirits. When young, he had been capable of powerful muscular exertions—he went in early life into the army, and was afterwards in the Hampshire Militia, as a Sergeant. About fifteen years ago, in consequence of taking cold, he became generally indisposed, for some days. His stomach became disordered, his bowels costive, his head affected with giddiness, and the back part of it with great pain. He paid little attention to his ailments, and

went on duty as usual. After the parade, he proceeded with some recruits to train them in an adjoining field, on a hot summer's day. But while in the very act of giving the word of command, he *suddenly* became blind, and was led home by two of his comrades. The Surgeon of the regiment was immediately sent for, who bled him freely in the right jugular vein, put him under a course of mercurials, and used every means in vain to restore his sight. From this treatment the patient derived much benefit as to general health, but as vision could not be recovered, he was discharged from the regiment. One year had elapsed, when he began to see better by the aid of glasses of the greatest magnifying power. During the last two or three years, he found his sight *gradually* getting worse. All the spectacles and glasses he could now try, were equally useless. He also complained of a violent head-ache, a throbbing in the temple, giddiness, and other symptoms of indigestion. Indeed his general health, he said, was then much impaired,

and his strength so much reduced, that he could not bear the least fatigue.

In the first four days, while under my care, he had recourse to mild aperients, which removed the costiveness under which he laboured, and from the 25th to the 28th of August, he was electrified. The head-ache had now left him, and on the 30th, he said, he could see better. From the 2d to the 9th of September, his sight gradually improved. On the next day he saw things *near* him *clearer*, and on the following, *distant objects much better*. He could now read *large print* without any fatigue to his eyes. On the 14th, his sight was still stronger, and continued improving till the 18th; and from that time, to the 19th of October, he gradually recovered the powers of vision to that *degree of capability* that the spectacles he *formerly used*, enabled him *with ease*, to read the *smallest print*. His health, too, had from my treatment, been fully restored, and he was again able to labour for the support of his family.

CASE 31.—Miss Ann Harding, 4, Orchard Street, Southampton, Milliner, was recommended to my friendly aid by Mr. James Davis, Linen Draper of the same place. This interesting young female, not more than twenty years of age, of a very slender form, and nervous temperament, had notwithstanding enjoyed during the greater part of her life, a tolerably equable state of good health. Having been brought up to the business of a Milliner, which not only confined her to sedentary habits, but from her constant application to fine needle-work, exposed her to a severe trial of the eyes, her sight had been gradually weakened, and at last she was reduced to a state, nearly approaching to *total* blindness. Her general health, had also previously suffered, but the paralysis of the nerves resulted from a great exhaustion of the nervous system. Greatly dejected by this distressing privation, she hastened to town, and placed herself under the care of one of the first Oculists of the metropolis, to whose skill, and unremitting

attention, she had been before greatly indebted. Under the care of Sir Wm. A—-, she derived the greatest benefit. Indeed from this, as well as from many other cases, which have come under my subsequent treatment, I can bear testimony to his successful practice in cases of *Gutta Serena*. During her stay in town, she made *great* improvement in her general health, which laid the foundation for the improvement of her sight. Blisters, and other local applications, did all that could be expected from them. She now could see better, but required the aid of glasses of great magnifying power, without which, every object appeared to her, as if enveloped in a hazy, dense atmosphere. Her eyes appeared very dull, with a vacant stare; and notwithstanding the pupil was dilated, no object was seen by her in its true colours—every thing appeared to her as if shrouded in mist, and she groped her way in the twilight, as if in total darkness.

Such was her state, when I commenced the application of Electricity, which I did on the 11th of September, 1816. I began with gentle vibrations across her temples, which produced a great glow of heat, and immediately afterwards a copious lachrymal discharge from both eyes. From the last date to the 20th of the month, she continued to improve; and on that day, after having undergone the fifth operation, great amendment was observed—the contraction of the pupil was distinctly seen, sensibility greatly increased—the light now affected her eyes, she displayed vivacity of countenance, and great cheerfulness of spirits. On the 30th of the month, and after the ninth operation, her sight had become much stronger and clearer—the pupil *readily* contracted and dilated, as she turned her head to and from the light—the eyes had then acquired considerable powers of vision, for she could see large objects and colours pretty distinctly without glasses. On the 3d of October, she felt herself *so*

completely restored to sight, that she was able to do fine needle work by candle light, without glasses, and with no injury to her eyes. From this indiscreet exertion, I however perceived a slight *inflammation*, and therefore insulated her again, passing the electric current through the head and eyes, and then dismissed her, with a request, that she should call upon me in a few days. She did so, in about a week, and also at the latter end of the month, when *she assured me*, that she continued TO ENJOY PERFECT VISION.

DEAFNESS,

From Paralysis of the Auditory Nerves, &c.

Nervous Deafness has always been considered by the first medical authorities, as one of the most hopeless affections of of the organs of hearing. The judicious Mr. Saunders, in his treatise on the diseases of the ear, considers this malady when of longer standing than *six months*, as incurable. Other writers, who suppose that they possess a profound knowledge of the mechanism of the ear, have maintained the same opinion. One of these aurists asserts with confidence, that the powers of Electricity, are only efficient in one case out of five, and the *reason* he assigns for that opinion, is probably *more correct* than the *assertion*—it is, because, in *his* employment of that remedy, he has found the cures in that proportion with the failures. A

better reason than this may be offered for the inefficacy of Electricity in such cases, which will be found supplied in the course of this work, by *authentic cases*, and by the *testimony* of *living witnesses*. With all my respect for the important profession of oculist—however much I may regard the department of surgery, I must candidly confess, that a Surgeon Aurist, is the *last* person on earth whom I would consult, in a case of nervous deafness, because this disease belongs to a class of maladies out of *his* province altogether. The following cases of *nervous deafness*, both in their *character* and *cure*, will enable the reader to form tolerably correct ideas of the *causes* and *consequences* of this disorder.

CASE 32.—Frances Millar, a fine young girl of ten years of age, the daughter of a Gardener in Southampton, was to all appearance healthy. This patient complained only of deafness, brought on by a fever, which had confined her for several months. Her deafness had come

on gradually, and was then of more than three years continuance. The left ear was most affected, and a loud ticking watch put to the external ear, could not be heard —nor did the teeth convey the sound to the sensorium. When conversing with her, the mouth was opened widely—she could inflate the tympanum of each ear, but immediately afterwards her usual deafness returned. The external indications were, *paleness* and *flabbiness* of the ear, and a *flattening* of the cartilaginous curvitures—there was no secretion whatever in the ear, which was therefore perfectly dry. In short, every thing designated her deafness to be *nervous*.

Under this impression, I administered the electric influence to her, from the 12th of September, to the 21st of October, with the greatest success. She took no medicines whatever during the course of her attendance. The treatment was both constitutional and local, and the process by no means painful. The following were her

own reports on the progress of her cure. On the 17th, after the third application, she heard a little better—after the fourth operation, a great deal better. On the 24th of September, better still, and continued improving in this way, until the 3d of October, when a cerumenous secretion appeared. On the 9th, she said she was getting quite well; and on the 10th, she said she thought, she could hear as well by the *left* ear, as she could by the *right*. To put this supposition to the test, I tried the following experiment. She stopt her left ear with her finger, and I struck a musical fork, of concert pitch (A.) and placed it within the distance of a foot from the right ear, which she heard distinctly. She then closed the right ear, and I placed the fork, struck with less force, at a greater distance from the left ear, and yet this child, with her *eyes closed* at the time, maintained that the sensation was more increased in that ear, though it had been the most defective one. Her amendment for a short time was progressive. She at last

varied from better to worse, being much affected by the changes of the weather. She caught a violent cold, and on the 12th complained of a head-ache. The operation was then repeated with increased excitement, and she recovered her hearing so rapidly, that she could hear my watch tick when placed on the table, at the distance of fourteen feet. I then dismissed her; and about six weeks after, called with a friend at the house of her father, where I found my little patient in perfect possession of her hearing, in good health, and high spirits. Both the father and mother declared that she could now hear as well as ever she had done, and expressed their gratitude for her perfect recovery.

CASE 33.—Mr. Henry Friar, Whitesmith, High Street, Southampton, about forty-seven years of age, of a sallow complexion, athletic form, and middle stature, gave the following statement of his case. About six years before, he had caught a violent cold from getting wet, while going

to his work, and not having afterwards changed his clothes for the whole day, he was siezed in the evening with a numbness on the right side of his head and face, which had been most exposed to the cold, wind, and rain. This deadly feeling gave him no pain, but much uneasiness, for he soon experienced so great a noise in the ear, that he could hear nothing on that side. By slow degrees he got somewhat better of the first complaint, but the buzzing noise in his ear still continued, and he got daily more deaf. This patient had resorted to many remedies, prescribed for him, both by the regular practitioner and the empiric to no purpose. The privation of hearing in his case, was no doubt occasioned by partial palsy, of which the muscles of the face bore evident marks—every symptom indicated paralysis of the auditory nerves. The hearing was much impaired, the cerumenous glands were torpid, and the external auditory canal perfectly dry. With an intelligent eye, despondency still shaded his visage.

Bad as was this case, and unwilling as I was to hazard a trial, which might bring discredit on Electricity, I yielded to the repeated entreaties of the patient, and undertook his case; but without any expectation of effecting his recovery. The watch placed at the right ear, and on the right side of the head, was to him as silent as a stone. His constant perceptions of *humming*, *whistling*, and *singing* noises, were so varied and diversified, as seemed to exclude every undulatory motion of the circumambient air. The other ear was not so much affected; but by the sympathy of parts, began also to decline in its susceptibility of sound. I employed Electricity in this case, nearly in a manner similar, to that in the preceding ones. Friction, I found to be the most potent. To sum up the result —after five operations, the patient was not only *perfectly relieved*, but *permanently cured* of a disorder, which bid defiance to every other remedy. This remarkable recovery took place in July 1816. I saw the patient several times afterwards, and also

just before my leaving Southampton, in December following, when he assured me with gratitude, that he had not only completely regained his hearing, but was entirely *free* from *those noises* in the head, which had so much distressed him, both day and night, for six years.

CASE 34.—Miss Mary Lambert, Mantua Maker, twenty-six years of age, of a pale complexion, spare habit, and nervous temperament, then residing in High Street, Southampton, was recommended to me by Mr. K——, Surgeon. She had been deaf between six and seven years. She had lost her hearing *gradually*, from a violent cold which had affected her general health, and materially weakened all her sensorial powers. The head had suffered most, and the deafness was *equally* great in *both ears*. She could not hear the tick of a watch, nor any conversation, unless the voice was much raised, and the articulation was *particularly slow* and *distinct*. Indeed I never met a more decided case of *nervous deaf-*

ness. The whole system seemed to labour under the lowest depression of *nervous debility*, from her sedentary habits. She said that she never had enjoyed good health, but had always been thrown into agitation, when she was hurried or surprised. On inspecting the ear, I found no cerumenous secretion, the tympanum *could not be inflated*, the watch pressed on the lower teeth, conveyed no sensation of sound whatever, her hearing was always worse in *wet*, than in *fine* weather. In this case, the eustachian tube was *also obstructed*—but there was no apparent cause of this obstruction. I was somewhat apprehensive, that not only a *defective energy* of the auditory nerve existed, but that it was *combined* with an *organic* derangement of the internal mechanism of the ear.

In the first instance, I therefore employed Electricity only as a constitutional remedy—the bowels were assisted by aloetic aperients, and I then directed the electric action to the head *generally*, to the ears

particularly, by stream and vibration, and sent sparks through the *Eustachian tube*, from the ear to the throat. This treatment proved both safe and successful. The electric course, though long and tedious, effected at last the cure of the patient. I commenced the operations on the 6th of August, and continued them till the 25th of November. Her attendances were pretty regular, and from first to last, her recovery was progressive. The symptoms of amendment which progressively appeared were—increased secretion of bright yellow cerumen—*less* of a singing noise in the *head* and *ears*—hearing better in the *left* ear first; but about the 25th of November, she had so completely recovered from her deafness, that she could hear my watch *distinctly* tick at the end of the room, and also any conversation, though uttered in a very *low* tone of voice. Just before I left Southampton, she called to thank me for my aid, and then assured me, that she could hear perfectly well, and that when she was suddenly spoken to, it *startled*

her much, and when hollowed at, it *distracted* her head.

CASE 35.—T. A. Esq. Gray's Inn, an eminent Solicitor, of very extensive business, had, by his great application to professional duties, brought upon himself a nervous complaint. This gentleman came to me in the summer of 1817; he was of a spare habit, of an active mind, and about 40 years of age. He had experienced a gradual loss of hearing for about two years. In its first approaches it was attended with a *buzzing noise* in the ears, and *defective secretion* of cerumen. He could inflate the tympanum, and hear the ticking of a watch at the distance of about three inches from both ears, which were equally affected. There was *no induration* of cerumen. The auditory nerves had *lost their tone*, and the nervous system, having suffered from *too great excitement*, had sunk into a state of *exhaustion*. In this case I recommended the patient, nervines, and applied Electricity as a constitutional

remedy. He, however, abstained from taking the medicines I had ordered, and notwithstanding the omission, by *Electricity alone*, he perfectly recovered both his health and hearing in three weeks,—a circumstance that left no doubt on my mind, that his disorder was *purely nervous*.

CASE 36.—The following is one of the most striking instances of the efficacy of Electricity I have known: though it is to be lamented that the patient should have been removed from town, before a cure could be completely affected.—Miss B—r, a mostinteresting young lady, of eighteen years of age, the daughter of a gentleman in Gloucestershire, but then under the tuition of a Lady, in the neighbourhood of Tavistock Square. From my successful treatment, of the preceding case, this young lady was brought to me in order to obtain my opinion of the cause of her deafness, and the probable result of an electrical course. In answer to my enquiries

I obtained the following particulars. The parents had observed the deafness of their daughter at a very *early* period of *childhood*. They consulted Mr. S. their relation, an eminent Surgeon, who gave it as his decided opinion, that nothing could be done for his grand-daughter, and, as he conceived her deafness to be *organic*, *urged* it on her parents, not to tamper with her ears. This admonition, coming from so high an authority, put an end to all further attempts to obtain relief.

When she had, however, attained her seventeenth year, she was repeatedly importuned by her friends, to place herself under the care of a celebrated Aurist, who pronounced her case to be a closure of the eustachian tube, but whose endeavours to remove the *supposed cause*, completely failed. After a regular attendance of three months, without deriving the least benefit, and after having heard the Aurist pronounce her case hopeless, she discontinued her visits as a patient.

On the minutest examination, I could not discover any thing that indicated *organic* disease, nor did the symptoms of which the patient complained, *at all vary* from those feelings, common in cases of nervous deafness. She could *inflate* the *tympanum* of *both ears*, but she could not hear my watch tick, unless it was placed *close* to her ears, *both* of which seemed *equally* affected. She could hear only loud and distinct speaking. The external auditory canal was *white* and *dry*, the ears *pale*, and *flattened*. Her general health was pretty good, her temper amiable, and her countenance placid. There was none of that sadness of the *eye*, peculiar to those who labour under deafness. As I was of opinion that the malady was *not* hopeless, and that a cure was *possible*, I ventured to undertake the case; but under a positive engagement, that my treatment should neither be *unpleasant* nor *injurious*, and that if, after one month's trial, the patient derived no benefit, the remedy should be *discontinued*.

I commenced the electric applications, in the month of September, 1817, as an excitant of the whole nervous system, and as a local stimulus. Insulation, and then the current were used for several days, with little benefit. Finding the torpor very great, I increased the power, and the advantage was soon manifest. The patient, shortly afterwards said, that she heard better—a few applications more, produced a *healthy cerumenous secretion*, in the *right* ear *first*, and soon afterwards in the *left*. At the end of a fortnight, her friend observed, that her hearing was *considerably better*, her spirits greatly exhilerated, and she seemed to be much pleased with the enjoyment of domestic conversation. She was so happy in her improved condition, that *she declared*, she could not be too grateful for the unexpected relief she had experienced.

As I proceeded with the various modes of operation, the amendment was progressive. She became more sensibly alive to

every noise *near* or *remote*. She could hear my watch distinctly tick, at the distance of *three* inches from each ear. The *handle placed on the lower teeth*, conveyed the sound to the sensorium; and the following fact, related by her friend, fully proved her *increased* capability. One evening, when she was in the attic of a house in Euston Square, she expressed her surprise on hearing an organ. She could form no idea from whence the sound proceeded, but on looking out of the window, she saw the itinerant musician playing the instrument, which thus delighted her.—After about five weeks attendance, this young lady, having finished her education, left London to return to her family. As I took a very particular interest in her welfare, I urged her friends to *persevere* in the employment of Electricity, and *instructed* her father, who is a gentleman of science, in its proper modes of application. I have since had the gratification of hearing from time to time, that though the means recommended, had not been *regularly* and

perseveringly employed, yet that she *continued* to improve in her hearing.

CASE 37.—Dr. S—, M. D. Berkley Street, called on me to ask, whether I thought Galvanism would be useful to him. I felt rather surprised at his extreme solicitude to recover his hearing, at his very advanced age, of more than 90. His deafness had been *then* of more than *twenty years* standing. He had consulted many of his Medical brethren, many eminent Surgeons, and some of the most respectable Aurists, both in England and Ireland, who all pronounced his case *nervous deafness*, and the disorder *incurable*. They advised oily and stimulating applications, which were tried, but without being productive of any advantage. I was decidedly averse to the employment of Galvanism in *his case*, but he persisted in his desire to try the experiment. In two minutes, he was convinced that the remedy was not calculated to *benefit him*. I then urged him to try Electricity, to which he at first objected,

having he said, tried that before, to no purpose—but he however consented to make another trial.

At the time he commenced the application, he was so *extremely* deaf, that I was obliged to *hollow* in his ears, to be heard, but at the end of a fortnight, he could *distinctly hear* me speak when near him, in my *usual* tone of voice. As I now conceived he had attained to the *full extent* of his capability, and that I could not go beyond a *certain point* of improvement, where the infirmities of old age could not be combated, I felt fully satisfied with the amelioration of his condition. I saw him some time afterwards nearly in the same state, as when he took leave of me as a patient, and have since heard of him from Dr. L—, who expressed himself much satisfied that I had been of *so great use* to (Dr. S.) his father-in-law.

Many of the preceding, as well as

succeeding cases, occurred during my residence at Southampton. As this circumstance requires *little* explanation, and *no apology*, I shall only observe, that they form a class of interesting and authentic cases, the history of which having been *registered daily*, supplied me with the most unexceptionable materials, for distinct and satisfactory statements. The patients were composed of a description of persons, who, having derived great benefit in their several disorders from my *gratuitous* practice, had perhaps less of that delicacy and reserve in the publication of their names, than others might have had, placed in different circumstances. In truth, it was for the information of the afflicted, that the patients themselves expressed a desire, that their cases should be made known.

Neither the short lapse of time, nor the distance of place, can affect the credit of their testimony, or diminish the merit of their cures. Many (if not all) of them are still living, and Southampton is nearly as

accessible to enquiry for residents in London, as Southwark. I *never did*, nor *ever will*, publish the *name* of any patient, but with the *sanction*, and at the *request* of the parties themselves. To act otherwise however interesting the case, I have *always* held to be *a breach of confidence*, unworthy of an honourable mind.

I have made these few observations to obviate those interested cavils and absurd doubts, which *envy* will be sure to *insinuate*, and *ignorance* to *muster*—and to assure the candid reader, that on the *truth* of these cases, I can safely rest my reputation. If there be practitioners who have no great share, either of practice or of conscience—they may have leisure for the fabrication of fictitious cases; but I have too much of the *former* to find time for such employment. and I trust enough of the *latter*, to keep me from stooping to so disgraceful an artifice. But enough;—to defend myself before I am attacked, would be a work of supererogation.

ON THE

DISORDERS OF CHRONIC INFLAMMATION.

GOUT.

That Gout is more frequently *accidental* than *hereditary*, is, I think, proved by facts. That it is a severe, but certain cure, for some disorders in the vital organs, may in a limited sense, be admitted. It is indeed often, an effort of nature to throw off some offending cause from the *system*. This opinion will scarcely be questioned, when we advert to the kind of persons who are generally the subjects of this disease. The temperate and the laborious, are seldom liable to gouty affections, while those who fare sumptuously, who repose in ease, and riot in luxury, are, by the *very laws* of animal nature, punished for their excesses. In the various maladies incident to man,

we may not only trace our *constitutional* or *acquired* temperaments, but almost our *virtues* and *vices*. There are, indeed, cases, in which the occurrence of gout is to be attributed more to *misfortune* than to *misconduct*—a few of which will be noticed.

It ought to be observed, that in the *acutely* inflammatory stages of the gout, electrical excitement is not beneficially applicable, nor is it a remedy, which in *any* case of this disorder, should be employed *without* caution. Medical means, must first be resorted to, and after the *acute stage* has subsided, the electric influence becomes a *valuable* auxiliary to restore the tone of the contracted muscles, and to *impart* a *vigour* to the enfeebled limb. Electricity is also found to be a powerful repellant of this ailment from the vital, to the external parts. But though, these results have uniformly occurred in my practice, yet after all, I would much rather, recommend the Air-Pump Vapour-Bath, for the cure of Gout, as I conceive it to be

a more efficient remedy than any other, with which we are acquainted for this disorder. In the application of that apparatus, I have not met with *one single instance* in which I have not succeeded, either in affording *immediate* and *permanent* benefit, or in *bringing* on a *regular* and *favourable paroxysm* of the disorder—which is itself, often of the greatest benefit. *

CASE 38.—Mrs. Herbert, School-mistress, Southampton, about thirty-six years of age, had been an invalid for some years, from a bilious derangement, which produced gouty spasms in the stomach and head, with affections of the disorder in the extremities, but which had never terminated in a regular paroxysm of Gout. She stated that she had never from her childhood.

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* See my Observations on the Properties of the Air-Pump Vapour-Bath, in the Cure of Gout, &c. with occasional Observations on the efficacy of Galvanism, in Stomach, Liver, and Bowel Complaints, Second Edition:—Sold by Highley and Son, Fleet Street, and may be had of other Booksellers.

enjoyed good health, but that during the last two years, her sufferings had increased in an alarming degree. Having, however, abandoned all hopes of a cure for her complicated maladies, she neither sought nor obtained further medical aid. She appeared to be of a very delicate constitution, pale complexion, her tongue was foul, and her pulse quick, feeble, and irregular. She described her pains to be extreme in the smaller joints, with alternate and sudden transitions of acute feeling from the stomach to the head, attended with giddiness, &c.—Her sight had become exceedingly defective, her strength enfeebled, and her spirits greatly depressed. Indeed, all the symptoms which characterise atonic and misplaced gout, were experienced by this patient.

On the 1st of August, she placed herself under my care, and after a fortnight, the varied employment of Electricity, afforded her singular relief. Her sight was *so fully restored*, that she was able to lay

aside the *spectacles* she had worn for *years*, and after a course of operations, continued at intervals for three months, she was restored to such a state of health and strength, as she had never before enjoyed. It is remarkable, that during the progress of her amendment, and while under the operation, she was always *instantly* relieved from gouty pains, however acute they might have been at the commencement. The medicines I had recourse to for the purpose of facilitating her recovery, were the mildest aperients, which under the electrical influence, fully excited the *action* of the *liver* and *bowels*.

CASE 2.—Mrs. Jane Bulbeck, Cold Harbour, near the Spa, was recommended to me by Dr. H—. This patient was about sixty years of age, tall and thin, of a sallow complexion, exceedingly feeble, and irritable. She had been severely affected with atonic and misplaced gout for some years, but more particularly so, within the last five months. The complaint affected the

head, hands, feet, and occasionally the shoulders and knees. She commenced a course of electrical operations, on the 10th of July, 1816. This was continued for several days, but without fully removing her pains. Finding that a cure, without a paroxysm was improbable, I proposed to fix the gout in one of the extremities. She consented to make the experiment, and the left hand, because the least useful, was determined upon, to be the part chosen for that purpose. On the 31st of July, she called on me, and exhibited the success which had attended the electric irritation in that hand. A regular paroxysm of gout, aided by medicines, had by that time, terminated her wandering pains, and she was rapidly recovering from her disorder.

CASE 3.—Mr. Joseph Marsden, Bridge Street, Southampton, was recommended to me by Dr. H.—He stated, that he was fifty-six years old, and that he had enjoyed tolerable health till within the last five years—that he had from time to time had several

severe attacks of gout, which had confined him to bed for many weeks on each occasion; but, that the last paroxysm which took place about six months before, had been much more severe than any preceding one, and that he then laboured under its effects. The knees and ancles, as well as the small joints, had become exceedingly rigid. He felt an extreme debility and *tremor* on muscular motion. The indurated parts felt exceedingly cold, and an obtuse pain affected all the joints. This patient was of a plethoric habit, and had been very judiciously treated by Dr. H. under whose care he had placed himself for a considerable time.

On the 3d of July, 1816, he received the first electrical application, which he said afforded him great relief. The circulation was restored in the affected parts, and on the subsequent operation, a general glow was produced. The rigidity was *removed*, the swelling *reduced*, muscular power *regained*, and the trembling had

subsided. After a course of irregular attendances, he was discharged on the 27th of September, having experienced much more benefit than he had expected, and as much as he sought to obtain.

CASE 4.—Mr. Richard Moore, fifty-seven years of age, was also sent to me by Dr. H.—His case was somewhat similar to the last one—he also complained of great weakness, swellings, rigidity, and coldness in both feet, which had then been the seat of gouty sufferings for ten months past. The muscles of the right hand had also become so much contracted, that he could not close it. The beneficial results produced, were as great as in the former cases.

Though I have met with great success in the relief and cure of regular and irregular gout, yet I must acknowledge, that I have been frequently disappointed, in affording permanent benefit. The *Galvanic treatment has often effected a cure*, when Electricity had failed. The employment

of the former remedy, to the *digestive* organs, has in numerous cases, not only prevented the *recurrence* of the malady, but *restored* the patient to general health, and to the *full* and *vigorous* use of his corporeal, and sensorial powers. On this important subject, much will be said under the heads of GALVANISM and GOUT. The report and statement of cases, will, there I am sure, fully establish the efficacy of a remedy, which fairly promises to be more useful to mankind, *than any other that has ever been introduced* into medical practice.

RHEUMATISM.

Most medical writers agree in admitting Electricity to be an useful remedy in chronic rheumatism. In the *acute stages* of this disease, where inflammatory action exists, and where depletion is clearly indicated, this agent being a stimulus, cannot be beneficial. The former is one of the most frequent disorders of this country, and often produced by checked perspiration, or by wrong medical treatment, where there is a constitutional predisposition.

Rheumatism is almost an inheritance entailed on the natives of this country by our *variable* climate. Imprudent exposures to cold, by closing the pores of the skin, induces this affection in the larger joints, and though not immediately attended with danger, yet it will nevertheless gradually *sap* the foundation of health, *destroy* activity, and *produce* decrepitude. In every

period of human life—even in *infancy*, this disorder has been found to exist, and therefore, is too well known, to need particular description. As it is necessary to distinguish between *Gouty* and *Rheumatic pains*, that distinction will be sufficiently marked in the annexed cases. Rheumatic affections, however, have often been supposed, to be *primary* diseases, where the cause existed not in the joints and muscles, but in *visceral* disorder, produced by a *diminution* of vital energy. In the treatment, for the cure of chronic rheumatism, the most eminent practitioners, have been *directly opposed* to each other; but as most of them *concur* in pronouncing Electricity a *suitable* remedy; and as the public also, are fully aware of its utility in this complaint, I shall only give a brief statement of a few cases, to point out the *peculiar* efficacy of the electric stimulus, in its cure. The first two cases I state from recollection, but as the cures, and the circumstances which attended them, were somewhat remarkable, they are strongly impressed on my memory.

CASE 5.—In the summer of 1803, a respectable farmer of Tre-barrow, near Launceston, brought his daughter to me for my advice. She was about twenty years of age, considerably emaciated, and was *so much crippled*, that she was only able to stand on crutches, and could not walk at all without assistance. She had been in this state for more than *twelve months*, during which she had not been able to *lie on bed* without aggravating the extreme pains which she constantly suffered in all the joints. She therefore generally *sat* up at nights by the fire side, and took what repose she could catch in broken intervals, when nature was wearied out by suffering. In this case, I anticipated no favourable result, and immediately communicated that opinion to her father. They were, however, extremely anxious to make a trial, and fixed on the Monday following, to commence a course of Electricity. The patient being apprehensive of severe pain from the operation, I administered to her

the electric vibrations, which instantly dispelled all her fears on that head.

This young woman, had before this time, had advice from the most eminent medical men, in the counties of Devon and Cornwall. All the means, however, they had tried, failed to afford her the least benefit, excepting the aperient medicines, which kept her bowels free from constipation. But her appetite was lost, her spirits sunk into great depression, and her mind in a state of stupor, from want of rest. When she visited me again on the Monday, her father assured me, that he had never seen so great a change in his daughter, as he had done, since the short trial of Electricity on the Saturday preceding. She confirmed his assertion, and said, that she had been ever since free from pain, having slept well the whole of the night, and awoke in the morning, *free* from *pain*, and *much refreshed*—found an increase of strength—could walk with *one crutch* only, a distance of about two hun-

dred yards—her tongue was improved, and her bowels lax. On Wednesday she walked to my house *without* a stick, assisted only by a female friend. On Thursday, *alone* with a *stick only*, when she reported herself much better in every respect. On Friday, she was enabled to walk up a hill almost a mile long, and was on her legs, the greater part of the *day*. Her father had taken lodgings for her in the neighbourhood, for the convenience of being near my residence, and on the Saturday, both of them took their departure home. Thus, after *one week's* course of Electricity, this severe sufferer was restored to perfect health, and to the *full* and *vigorous* use of her limbs. This case, from its successful termination, made considerable noise in that part of the county, and brought me a crowd of rheumatic invalids from the surrounding districts—a circumstance which afforded me *all* the advantage I then sought to obtain from my labours—the satisfaction of being useful to the afflicted.

CASE 6.—During my residence in Wales, in the Autumn of 1811, Mrs. H—, a respectable lady, sister to an eminent medical practitioner in London, and the mother of a large family, resided near me. Though she was a stranger to me, I knew that she was labouring under a severe attack of rheumatism, which had confined her to her house for six weeks. She had been *daily* and *regularly* attended by a Surgeon Apothecary, from whose medicines she derived no sort of benefit. On hearing of her serious indisposition, and being anxious she should try Electricity, I sent my compliments, and offered her my friendly aid. She knew by report that I had been successful in the cure of this complaint, in the cases of several poor persons who had been sent to me by the medical men, from the Swansea Dispensary, to which I afforded my gratuitous services. From this knowledge of my practice, she consented to make the trial. When I waited on her, I found her sitting before a large fire, in a room intensely hot. She

was placed in an arm chair, with her lower extremities wrapped round in four large blankets, and her feet resting on a stool directly before the fire. She was very pale, much depressed, and unable to *move at all* without assistance. She had been in this state nearly six weeks, and her complaints were—violent *pains* in her hips, thighs, legs, and feet, with a feeling of deadly coldness. She said she was also *perfectly helpless*, and could not move her limbs without the aid of her servants, who carried her up and down stairs.

We moved her in the chair to the table where the machine stood, and I commenced the electrical application with a strong power, without producing any sensible effect. I went on increasing the power to as great a degree as I safely could, and after five minutes, she said she felt something running down her legs—then a slight degree of tingling—then a glow, and then increased heat. In a moment after she exclaimed, 'I feel pain.' That in-

stant I diminished the strength of the stimulus, and proceeded a few minutes longer, when she said she felt herself *very hot*. I requested her to wait a little before I renewed the operation. My attention was then attracted to some curious ornaments on the chimney mantle piece, which, while I was examining, a sudden movement behind me made me turn round, when to my surprise, I found the lady herself walking up and down the room. She was in a glow of heat—her limbs were perfectly free from pain, and as capable of motion as ever. This sudden relief, as may well be supposed, surprised her servants.

I immediately directed that she might go to bed, and told her not to be discouraged, should she experience a relapse. She walked up stairs unassisted, which she had *not* done for *six weeks* before. On the following day, she *required* my aid again, and after *five* more applications of Electricity, she was perfectly and permanently cured of *every symptom* of chronic rheu-

matism. This lady, in about eight months afterwards, left the Principality, for Devonshire.

The multiplicity of rheumatic patients, of whose successful cases I have kept a register, render it difficult to select with advantage, for the information of the reader. To afford room, therefore, for greater variety of cases, I shall curtail the following, by giving only the bare facts, as transcribed from my memorandum book.

CASE 7.—Mrs. Joan Duncan, Chapel Street, Southampton, recommended by Dr. M—, aged thirty-five, had been dyspeptic and hysterical, about fourteen weeks—complained of violent rheumatic pains in the shoulder and knees—pulse quick, and bowels irregular. After the first application, on the 2d July, 1816, considerably better—amendment progressive. Dismissed perfectly cured, on the 10th of the same month.

CASE 8.—Mrs. Wake, Queen Street, Southampton, aged seventy-six, general health bad till within the last four years—attacked with rheumatic pains in both shoulders, with numbness and stiffness—her complexion sallow—perspiration obstructed—bowels free. Commenced the electric course, August the 1st. 1816—after the sixth application, she said she was free from pain—eighth, the weakness still remained, but the stiffness was removed. On the 5th of October, she reported herself perfectly free from any ailment, having from only occasional attendances, derived a full and permanent cure, without the aid of any other medicine, than the mildest aperients.

CASE 9.—James Trimboy, labourer, Chapel Street, recommended by Messrs. Randal and Son, Chymists, Southampton, sixty-seven years of age. He stated, that he had from the hardships of life, and constant exposure to cold and wet, lost his health for some years. He had suffered

much from rheumatic pains for a fortnight past—had been attended by Mr. K——, Surgeon, who had tried various means without affording him any relief—the left shoulder, and the right hip, were most affected, with a constant gnawing pain which unfitted him for labour, and deprived him of the means of procuring a livelihood.

On the 22d of August, 1816, he received the first application—on the 23d, he felt less pain—on the 30th, was considerably relieved in the shoulder—no remaining stiffness except in the thigh—pain continues, especially when *in bed*—September the 11th, reported himself quite free from the disease, both in the hip and thigh. I saw him in December, and he had no return whatever of his complaint, though he was frequently exposed to *heavy rain*, and hard labour in the fields.

CASE 10.—Mrs. Sarah Cole, Taylor's Brewhouse Yard, recommended by Mr. Moody, Brewer, Southampton. She was

short, stout, and had reached the very advanced age of 89 years. This patient said, she had never before *been ill in her life*, though she had been a hard working woman, and had lived as cook in many respectable families. About six weeks before this time, she had experienced the first attack of rheumatic pains, flying about in all her large joints. She complained most of an acute pain from the nape of the neck to the elbow, particularly in the left shoulder-blade, which had so much distracted her, that she declared she had not closed her eyes for eight nights past. She had a great dread of medicines, but encouraged by her friend's success in Case 5, she was prevailed on to seek my aid.

She was under great suffering at the time I commenced the electric application —her tongue and pulse indicated irritability—her skin was hard, parched, and dry, and she declared, that her stomach and bowels were much out of order. The first operation was very mild, and took place

on the 10th of August. Her relief on that occasion was great, for she soon exclaimed that the pain was gone. On the 13th, she called to say, she felt a little return of pain—the relief then again was instantaneous. On the 16th, she reported, she was free from pain, and her stomach and bowels more comfortable. On the 17th, no return of the disorder—on each day, the application of Electricity for three minutes, produced a comfortable glow throughout the whole frame, and by that time refreshing sleep followed. On the 18th, she experienced a slight return of pain for two hours during the night—perspiration being still somewhat obstructed. On the 19th, after the fifth application, which took up about three minutes, she said that she was quite hot, and in a profuse perspiration. On the 20th, the excitement was repeated, with similarly good effects, when she declared, that she was quite restored to her usually sound health, and free from any ailment whatever. This grateful old woman called on me in De-

cember, before I left Southampton, to thank me for my assistance, again asserting, that she never was better in her life, than at that moment.

Mercurial Rheumatism.

Some cases of Mercurial Rheumatism have occurred in my practice, most of which have been cured.

CASE 11.—John Jenkins, Sergeant in the 98th regiment, about thirty-eight years of age, was recommended to me by Mr. K——, Surgeon, Southampton. He complained of most distressing rheumatic affections, from the shoulder blade to the hand, and on the shin bone, together with painful feelings about all the joints. While on military service, he had been twice subjected to a course of mercurials.

He commenced the electrical operations on the 25th of September, 1816. On

that occasion a glow was produced, of which the diseased parts partook with exquisite sensibility. I had been apprehensive that the bones might have become *carious;* but on the 27th, when I repeated the application, my doubts on that head were happily removed. On the 2d of October, he reported himself to be in less pain in the arm and leg, and I continued to repeat the operations on the 7th, 11th, and 12th of the month, when, from the appearance of recovery, I desisted. I saw him again in a fortnight, when he said, he was quite well, and in a few weeks afterwards, he repeated his visit to assure me, that he had not then had any recurrence of the disease.

Inflammation of the Periosteum.

CASE 12.—Mr. F. about twenty years of age, of a spare habit, delicate constitution, and much emaciated, was recommended to me by Mr. G—, Chymist, New Road. The patient came attended by his

father, who informed me, that about a year before, this youth had declined in health, and that several respectable practitioners, besides a great medical authority, had pronounced him *consumptive.* He had been sent to a watering place, and under the best medical advice, he had from time to time had recourse to various means for recovery, but without success. After very minute enquiries, I judged his case, to be an inflammatory affection of the membrane which covers the bones, and thought that Electricity might relieve him. The patient described the pains he felt as being particularly acute, and confined to a small space about the middle of both arms, between the shoulder and elbow, and the shin bones of both legs. The tongue and pulse indicated great irritation —appetite bad—digestion worse—sleep disturbed—spirits depressed—great debility, and general emaciation.

The first application of Electricity was very mild, and for a few moments, pro-

duced exquisite sensibility. The second, a great glow in the parts affected. The third, freedom from pain. On the succeeding day the pains greatly increased, but on the fourth application, he was again relieved. I now changed my mode of operation, and had recourse to insulation with friction, which were attended with the most beneficial results. On the sixth application, he was altogether free from pain. From this time I did not see him again for three months, when he called to assure me, that he was not only perfectly relieved, from his painful malady, but he had also completely recovered his health and strength, from some simple means which I had recommended. About six months afterwards, I chanced to meet him, when, but for his addressing me, I should not have known him, from his very improved appearance.

This recovery, was as singular, as any case I have ever met with. I have had one case of this species of rheumatism, in

which the electric stimulus had a different termination. The patient was about fifty years of age, had gone twice to India, and in both voyages, had been attacked with bilious fever, for the cure of which, mercury had been profusely administered. This course of treatment, eventually produced inflammation of the periosteum, from which he had suffered severely for twenty years, notwithstanding every remedy had been tried to procure him an alleviation of the tortures which he endured. He was anxious to try Electricity, although I thought it would produce no benefit. The mildest applications only aggravated his sufferings---the disease was incurable. Several eminent Surgeons had suspected that a *caries* of the bones had taken place, and the electrical stimulus confirmed the truth of that conjecture,

Lumbago.

In my practice, I have frequently found, Lumbago combined with other rheumatic affections ; but I have only met with *two* instances in which this complaint was *solely* confined to the *loins*, and in *both* these cases, the patients were cured by Electricity. This disorder has often been mistaken for the pains arising from affections of the liver, and in such cases Electricity is not a suitable remedy *till the primary* disease be relieved.

Sciatica.

This is a most painful variety of rheumatism, of frequent occurrence in bilious and dyspeptic habits, and not easily cured.

CASE 13.—William Sawyer, a middle aged labouring man, who had been relieved from a severe *Sciatica* some time before, by Mr. C—, Surgeon of Romsey ; but some weeks afterwards was siezed with a more

acute affection of the same kind than ever. The pain was so extreme from the spine to the knee, and inside the thigh, that he entered my room completely bent down; and though he had made shift to walk a distance of eight miles that morning, in order to obtain relief, yet he could not stoop to sit on a chair.

On the 23d of August, 1816, I commenced the operations, and passed the electric current along the course of the sciatic nerve for a few minutes, when he experienced so much *immediate* relief, that he was not only enabled to stand erect, but to walk home with *ease*. After the second operation, he was considerably better, and on the following day, said he had not had any return of the pain. After repeating Electricity in different forms on the 26th and 28th of August, he reported himself to be quite well. On the 30th, he was dismissed cured; and three months afterwards, he called on me to express his gratitude for his perfect recovery.

CASE 14.—Mr. G—, Butcher, Southampton Market, about sixty years of age, was severely afflicted with the same complaint for some months. I adopted in his case a treatment similar to the last, from the 16th to the 27th of September, when he also was perfectly and permanently cured of the disease.

CASE 15.—Alexander Wood, day labourer, about fifty-five years of age, was recommended by Mr. Randal, Chymist, Southampton. This patient stated, that his first attack of rheumatism, was occasioned by his sleeping on the ground while on foreign service, *thirty years ago*, as a private soldier: that his complaint terminated in sciatica and lameness, of which he had *never* gotten the better. He had received the aid of Army surgeons, and Continental practitioners to no purpose, and was afterwards discharged from his regiment. During the long period of his affliction, his thigh had become wasted, and he had not only suffered much from

pain, but from *coldness* and *rigidity* in the muscles. All these distressing symptoms, were not only relieved, but perfectly cured in the course of eight operations. This happened in August, 1816, and four months afterwards, the patient called on me to say, the cure had been complete, and to make his grateful acknowledgments. However extraordinary this case may appear, from the *duration*, and from the *confirmed* and *inveterate* symptoms of the malady, Mr. K. an eminent Surgeon, who witnessed the operations, can attest the cure.

The cases of Sciatica which had resisted the electrical remedies, were those in which the disease was occasioned by *visceral obstruction*, not having been *previously relieved;* and where a *wrong* treatment, had rendered a cure hopeless. I ought here to observe, that the AIR-PUMP VAPOUR-BATH, after the application of the galvanic excitement, when the malady arises from indigestion, bilious obstruction, and costiveness, has been found *more* efficacious than Electricity.

ON

CACHETIC AND SCROPHULOUS DISEASES.

This class of maladies has been characterised by an emaciation of the body, without any febrile or nervous affections. But this definition is only in part correct, for a disordered state of the digestive organs will not only affect the nervous system, but will frequently produce *defective nutrition*, and *vitiation* of *all the circulating fluids* of the human body. Electricity is particularly beneficial in a few disorders of this class, but *Galvanism*, and the *Air-pump Vapour-Bath*, are of much more essential use, and extensive applicability.

Jaundice.

In those cases where gall-stones are lodged in the cystic duct, when it is in a state of constriction, Electricity has been both recommended and employed, by the faculty with advantage. I have also used it with success in a few instances, but not with that *permanent* benefit to *hepatic* patients, as *Galvanism*, which has not only removed the *obstruction*, but *prevented* the *formation* of biliary calculi.

Dropsy.

I have had but one case of Dropsy of the cellular membrane, and in that, I have employed Electricity with advantage.

CASE 1.—A middle aged female, who had for years suffered, from a disordered state of the digestive organs. which produced a *periodical irregularity*, became at last *dropsical*. When she first consulted me, I directed my attention to the state of

the *primæ viæ*, and by the aid of medicines, her stomach and bowels were first relieved. I then electrified her, which removed the obstruction, and in a few weeks afterwards, she was perfectly cured of the *dropsical affection*, which had been chiefly confined to the lower extremities.

Disorders peculiar to Females, Obstructions, &c.

In the delicate and painful diseases of Females, many cases have occurred in my practice. In these complaints, I have uniformly succeeded, either in procuring *partial* or *complete relief*, except in *three* cases. Mr. S. Birch, an eminent Electrician, who has written an excellent pamphlet on this subject, has clearly pointed out those cases in which Electricity is applicable, and has also supplied abundant proofs of its efficacy. These critical and periodical ailments, may be divided into three distinct heads—*Retention*, *Interrup-*

rapid increase of her disorder. In the first instance, the fermentation of her stomach, was corrected by alkalines, and the action of the bowels restored by aperients, which occasioned her to void a quantity of worms; and then the employment of Electricity, both as a constitutional and local remedy, effected the cure. This lady now resides in town, and I am authorised to say, that though she has not enjoyed the best state of health, she has never since had occasion to complain of obstruction.

CASE 3.—Sarah Harvey, of All Saint's Place, about nineteen years of age, was recommended to me by Dr. H.—— This poor girl, had ever since the age of fourteen, suffered severely from the most painful symptoms attendant on *chlorosis*. The digestive organs had been constantly in a deranged state—the respiration disordered, and giddiness of the head existed, with a perpetual sensation of heaviness. Her extremities were always cold—the spirits depressed, and she was subject also to

severe hysterical fits. Upon the whole, she was much emaciated, and of course in a a state of great general debility. Indeed her condition was such, as led her friends to suppose that she was far advanced in a decline. She was much above the ordinary height—the chest very narrow—the the cheeks displayed a hectic flush, and her hollow cough, indicated *incipient phthisis.* From Dr. H. she had received every attention, but all the ordinary means had proved unsuccessful.

I prescribed for her mild aperients, and on the 2d of August, 1816, I employed Electricity for the first time. This, in the space of two minutes, produced great irritation about the pelvis, and brought on a profuse perspiration. On the 5th, the operation was repeated, when, in addition to the effects just mentioned, it occasioned a considerable movement in the *affected organ.* On the 6th, after the third application, she reported that the severe pains she had so long suffered in the small of

the back, and the loins, had been quite relieved. On the 13th, she continued recovering, when I varied the operations with so much effect, that after a few occasional attendances, she was almost completely cured. Her general health too, was so much improved, that her friends were quite surprised at the advantageous change in her appearance. But to effect the full re-establishment of her health, I occasionally administered Electricity to her for a few weeks longer, when nature became so invigorated, as no longer to require the beneficial aid of that salutary excitant.

CASE 4.—Miss M—, Southampton, about nineteen years of age, in consequence of a nervous disorder, had for some years past been subject to great irregularity, which at last terminated in a total obstruction. Her general health was much impaired, and her delicate frame had been most sensibly affected by hysteria and hypochondria. She laboured also under great oppression of the head and chest,

with pains in different parts of the body, and what distressed her more than all, *was, a circulation, languid to an extreme and alarming degree.* Her countenance was pale and sallow, her lips of a purple hue, and her hands and feet cold and benumbed. Blisters, fomentations, hot-baths, and every other remedy, which the skill of Mr. C—, her medical friend, could suggest, had failed to restore the lost energies of nature.

Bad as was this case, my sanguine hopes of inducing recovery, were fully realized. After a course of electrical operations, from the 6th of July, 1816, to the 25th only, I had the satisfaction of removing the local malady.

CASE 5.—The sister of the young lady mentioned in the last case, about twenty-five years of age, had also suffered much in a similar manner, with the addition of a great degree of *scorbutic* affection. She was placed under my care on the 18th

of July, and so efficacious were a *few* electrical applications, that on the 25th of the same month, her mother reported the *perfect* removal of the obstruction; and her general health was soon afterwards fully regained.

CASE 6.—Miss D—, of Southampton, about twenty-five years of age, of a sanguine temperament—in addition to all the attendant symptoms of obstruction, had for several months laboured under a *severe and constant aching pain* in the *front* and *back* of the head, from which she never could obtain even a momentary relief, by any means which had been recommended. With the aid, however, of Electricity *alone*, the obstruction was removed, the affection of the head gradually abated, and she obtained a complete and permanent cure. She commenced the electrical course on the 3d of September, and attended regularly till the 30th, when she reported herself, perfectly free from *every* complaint.

CASE 7.—Miss W—, of the Poligan, Southampton, applied to me for my opinion on her case, which upon the whole was somewhat singular. Her complaint was *nervous deafness*, and though her appearance indicated defective action in the uterine system, she withheld from me that information. After *three* attendances, I requested her, in consequence of her irregular visits, to decline my operations altogether, as in that way I could be of no use to her. The answer surprised me not a little. Being informed that I was much mistaken, as I had already conferred on her a *great* benefit—*that* indeed, which she had been *seeking* in vain for *seven years*, and which she had now fully obtained.

In this case, I insulated the patient, passing the electrical current through the ears and the head, and without either *intending* or *expecting* so happy a result, the most important change succeeded. The *sensorial* power was *not* regained, but the

concealed obstruction, which was the *cause* of that complaint, was removed, and the patient had no doubt but the effects would soon cease. I had no opportunity of seeing her again, being then about to leave Southampton for London.

CASE 8—Mrs. Mead, Orchard Street, Southampton, about thirty years of age, was apparently healthy and strong. She had enjoyed good health, till within the last four years, when she had been siezed with a bad cold, since which, she has laboured under all the peculiar ailments of total suppression. This complaint, not only affected her general health, but produced much local disease, with morbid secretions. She commenced the electrical application on the 5th of September. The head-ache relieved by the 10th, and the bowels on the 21st. Other distressing symptoms were removed by the 8th of October—Circulation increased on the 14th, and on the 17th, she reported her perfect recovery. I saw her afterwards in Decem-

ber, when she stated herself to be restored to the best state of health.

CASE 9.—Mrs. R.—This case was almost in every respect the same as the last. She commenced the electrical course on the 11th of September, and fully recovered her health on the 28th of the same month, when she desisted from its use.

Among the numerous instances of recovery in these kind of cases, that have occurred since I commenced my professional practice in town, I shall now select some of the most remarkable

CASE 10.—Mrs. H—, a lady, whose husband had been a patient of mine, sent a female servant to me for advice. She had for years past suffered much from total suppression. The obstruction had produced an acute inflammation and abscess in the liver, which terminated in a chronic affection of that organ. She had been under several medical practitioners, but

pulse and tongue were much improved—the appetite and the digestion increased—the cough abated—the strength regained, and the voice, which before was hollow and rustling, now became full and melodious. After five applications, she had recovered so much constitutional vigour, that she was able to travel to Worcester in one day, without being at all fatigued—while in her visits to me, she was obliged to be conveyed in a coach from St. James's to Southampton Row, and back again. Several months after, she called on me to express her gratitude for the great benefit which she had derived, and also to inform me, that she had not once had any return whatever of the malady, but had till then, enjoyed a state of uninterrupted good health. This lady was very delicate, middle aged, and the mother of a young family.

CASE 12.—Mrs. Carter, recommended by Dr. L——, was about thirty-two years of age. She had for several years suffered much from indigestion, and nervous debi-

lity, which had terminated two years ago in hemiphlegia. Of this disorder she had partially recovered, but she became *asthmatic*, with symptoms of *incipient* phthisis. She had been married nine years, but had no family. A *total suppression* had taken place soon after her dyspeptic attack, and though she gradually obtained a slight periodical relief, the disorder returned every *third* week, while in the intervals, a *copious morbid secretion* took place. Her health now declined rapidly—her strength sunk into extreme debility, her spirits into *apathy* and *sadness*, and a general emaciation seemed to forbode a premature decay. I employed the electrical excitement for the first time on the 8th of November, 1816, and again on the 14th and 15th, when suspecting the irritation of worms, I directed the stimulus to the stomach and bowels, and on the following day, she voided a great many. On the 16th, I applied the Electricity, for the second time, across the pelvis, and then desisted. The effects were decisive—the

morbid secretion immediately ceased, and before another opportunity for repeating the trial occurred, nature had fully regained her powers.

CASE 13.—In the month of May, 1818, Dr. D—, favoured me with a call, to state the case of a young lady, who had for about a year laboured under a suppression, which had resisted all the medical remedies he had employed. On my expressing my confidence in the powers of Electricity, he promised to send me the patient for a trial, making at the same time the frank declaration, that he expected no good from its use; but he would consent to the experiment as a *dernier* resort, since if it failed to relieve, he should then know that nothing further could be done. On the 12th of the same month, this young lady waited upon me with a polite note from her physician. It appeared, that her complaint had been preceded by a disease of the stomach, attended by defective biliary secretion, and constipation. The tongue and

pulse indicated great irritation—there was also a determination of blood to the head, and the extremities were cold. I urged her particularly to attend to her digestive organs. I laid down a *rule* for her, as to *diet*, and administered Electricity in *every form*, varying my modes according to circumstances. I commenced the operations on the 12th of May, and continued them occasionally till the 18th of June. During the whole of this period, nothing more than the improvement of her general health, indicated a probability of a favorable termination to my labours. In a few days afterwards, however, the female friend of my patient, announced to me the successful result of the electrical course, and particularly of the last operation. I was also soon favoured with a visit from herself, which afforded me demonstration of her perfect recovery. Since the termination of our medical intercourse, I have had the pleasure of many friendly calls, from this amiable and accomplished young lady, and I am happy to add, that she never has had

the *slightest recurrence* of her complaint, but has ever since her cure, enjoyed a *vigorous* and *uninterrupted* state of health.

CASE 14.—The following singular and extraordinary case, shall conclude this class of diseases. A lady, about forty years of age, of a sanguine temperament, and the mother of a large family, who had for many years previously enjoyed an excellent state of health, came to consult me on her remarkable case. Soon after her last premature confinement, she became a severe sufferer, from a diseased state of the uterus. The mischief was supposed to be done in delivery. The complaint was pronounced by no less than ten surgeons, and two physicians to be *irremediable*. That delicate organ, now inclined horizontally, and was at stated periods, subject to spasmodic constrictions, which constantly produced an agony, beyond endurance. *Habitual and actual constipation*, re-acted on the structural derangement, and increased the irritability of the parts.

When nearly in this state, I administered to her the electrical stimulus at two different times, which procured her complete relief. The obstruction arising from an accidental, and functional, if not a *structural* difficulty, was removed in the course of a few hours, and her health, strength, and spirits, soon afterwards restored.

There are other female maladies, arising from their peculiar conformation, improperly termed *local* diseases, in which Electricity, but particularly *Galvanism*, has afforded the greatest benefit. This powerful agent, combined with attention to regimen, air, and exercise, will, I am confident, do *more* for them, than *all* the medical recipes of the national pharmacopoeia. I do not assert this *rashly*, but give it as my *deliberate* opinion, founded on the unerring evidence of such facts, as cannot be *controverted*. But Galvanism and the Air-Pump Vapour-Bath, should be tried where Electricity fails.

The administration of these powerful remedies, however beneficial they may be in the cases I have pointed out, are nevertheless not only inapplicable, but dangerous at certain periods of gestation, and should by no means be resorted to, without the utmost attention to the symptoms.

Hydrocele.

The Dropsy of the Scrotum, is a common disorder, and requires surgical aid. I have had *several* such cases, recommended to me by J. P—, Esq. an eminent Surgeon in the west end of the town, in which the employment of Electricity has very *materially aided* his skilful treatment, and effected a perfect cure.

CASE 15.—General L—, was sent to me with a view of procuring the removal of an *induration* of the testes. In this the hopes of the patient were disappointed, but the excitement hastened the *accumulation* of the *fluid*, and of course, more speedily prepared the part affected for surgical operation, which was performed, with decided and permanent benefit.

CASE 16.—M——, Esq. was afflicted with a schirrus affection of those glands, for a series of years, during which, he had

from time to time, had the advantage of the best advice, without benefit. An operative Surgeon, *too partial* to the knife, had *pronounced* his case *fatal*, unless he submitted to its application. This gentleman applied to Mr. P—, whose *judicious* treatment averted a fatal termination of the malady. This was followed by a course of Electricity for two successive springs, which eradicated every symptom of the local ailment, and procured him a renovated state of health.

CASE 17.—An officer, now on foreign service, had a complaint of the testes, which terminated in *hydrocele*. The operation was successfully performed, but the *enlargement* and *induration* required the aid of Electricity, which I administered with *decided advantage*.

These, and many similar cases, have been not only *partially relieved*, but *perfectly cured*, by Elcctricity. But after all, I must here observe, that I have found

Galvanism, as a constitutional remedy, where the local malady arises from a *diseased habit*, generally *much* more beneficial than the electric principle. The description of these disorders and their treatment, should be addressed exclusively to the male sex; and as it is a matter of vital importance to the health and happiness of the community, I shall probably soon present to those most deeply concerned, a small pamphlet on that interesting subject.

Glandular Affections.

I have had a few cases of *indolent tumors*, all of which have been successfully treated, by the electric remedy. These *swellings* are either cured by *resolution* or *suppuration*. In the former case, the stimulus must be applied in an early stage of the disease—in the latter the formation of the matter is *accelerated*, and requires to be discharged by the lancet.

CASE 18.—Joseph Steel, five years of age, was recommended by Messrs. Randall and Son, Chymists, Southampton. This child, from his earliest infancy, had been very unhealthy. His appearance indicated a *scrophulous* habit—he had considerable swellings in the glands of the neck, which, though *hard* to the touch, gave him no pain, but by pressure. These indolent tumors were perceived by his mother, when he was only two months old. This poor little sufferer was much alarmed at the sight of the machine, and the crackling noise of the sparks.

I employed the mildest means, and sent the electric current through the torpid glands. I commenced the operations on the 11th of September, 1816, and continued them till the 30th of the same month. After the first four applications, the hardness of the *swelling subsided*, and at the eighth time of his attendance, the parts had become *soft*, and *considerably diminished* in size. In the progress, however, of re-

peating the operation, the *susceptibility* of the child, became at last *so great*, that he could not *bear* the mildest excitement. On this account, I was under the necessity of desisting from the application, before a complete cure could be obtained. The impulse, however, that had already been given, proved sufficient to prevent a *suppuration*, and led to a cure.

CASE 19.—Mr. B— was recommended to me by his family Surgeon and Apothecary, under whose care he had placed himself, for a glandular affection. This Gentleman's tumor was *hard*, *red*, and *painful*. I told him it was now *too* late to expect *absorption*, but that the swelling might be soon *matured* for a discharge by the lancet. This was agreed on and completely effected, but without the application of the lancet. He commenced the electrical operations on the 25th of May, and continued them till the 8th of June, 1818, when nature was enabled by a *successful* effort to discharge the matter.

Ulcer.

The case, which I am now about to give, will be found to speak volumes on this subject. In point of interest, it exceeds greatly the few others, which have come under my treatment.

CASE 20.—Mrs. E. Bolt. then residing near Bos-Castle, Cornwall, was middle aged, very stout, and the mother of a large family. She had, from an acute disease of liver in 1803, been subjected to a mercurial course, under the medical aid of my particular friend, Dr. C.—During a state of salivation, she took a violent cold, from an imprudent exposure to wet. This produced a very serious illness. She was confined to bed for some months, during which, she required constant medical attendance. Having at last experienced a *partial* recovery, she was sent to me by Dr. C—, for a trial of Electricity. She then laboured under *obstruction*, and from the information I could collect, she had

been subject to breakings out about the neck, which led me to conclude, there was in her case, a *constitutional taint*. She complained that her general health was very bad—her flesh and bones, she said, felt sore at the touch, and *various parts* of her body were covered with ulcers. Her *breath* was *particularly offensive*—every tooth in her head, *loose* in its socket, and the air of the room, in which she remained but a few minutes, was from *nauseous effluvia*, *unfit* for respiration. The legs were also affected with an *œdematous* swelling, and though she appeared stout and strong, she was suffering greatly from an extreme debility.

The electrical means which I employed, soon produced a *favorable change* in the ulcers, and on the obstruction being completely *removed*, they *healed* rapidly. The general health, too, gradually *improved*—the swelling of the legs *subsided*; and in the course of seven weeks, she was pronounced by her medical friend, to be in every respect convalescent.

Elbow Case.

CASE 21.—A young girl, about nine years of age, of a scrophulous habit, whilst carrying a pitcher of water too heavy for her, fell down, and severely *bruised* her elbow. The Surgeon who attended her, advised the use of embrocations, and ordered the limb to be kept supported in a horizontal position, All this was complied with for several months, when upon some occasion it was discovered by her distressed parents, that this poor child, instead of having improved, had so far *lost* the use of her arm, that she could not, on trial, *move* the joint—a *muscular contraction*, and an *apparent enlargement* of the ligament, counteracted all her efforts for that purpose.

As no great mechanical obstruction to the recovery of muscular capability *appeared* to exist, I commenced the electrical application by local irritation of the parts, and sending the fluid through the joints.

By these means, the enlargement was soon considerably diminished. I then used the convulsion power of electrical excitement, by making the patient hold a poker in her hand, and at each application, the *vibratory action*, aided by the *ponderous metal*, produced an *increased elongation* of the muscular fibres. Thus a fortnight's electrical applications, with the aid of aperients, restored her to the natural use of her arm. I particularly marked the progressive stages of her recovery. After the *first* application, she could not stretch out her arm; but after the *last*, she moved it about with ease, in *all* directions. This case occurred some few years ago, but several months after the cure was performed, I had an opportunity of seeing this child, and of ascertaining that the benefit was permanent.

In Hip Cases also, Electricity has been successfully employed. I have had two cases of this kind, which were greatly relieved by its use. For the cure of this disorder,

I would rather depend on the Galvanic application to the *digestive organs*, and the local employment of the Air-Pump Vapour-Bath to diseased parts, than on the electric excitement. See the cases in my work, on the Air-Pump Vapour-Bath.

Knee Cases.

In some of these disorders, the electric stimulus has proved beneficial, and in others, it has failed. But I am happy that experience enables me to add, that the efficacious powers of the Air-Pump Vapour-Bath have been most satisfactorily established. *Vide*, my work on that subject.

The following instance however, affords ample proof of the utility of Electricity in a number of these cases.

CASE 22.—Mary Fry, aged thirteen, daughter of Mr. Fry, Southampton, had *seven years* before application was made to me, severely bruised and injured the cap

of her knee. Mr. C—, a skilful Surgeon of Portsmouth, was called in, who prescribed the application of fomentations, and every other suitable means. Suppuration, however took place, and she got better. But, from the constitutional taint, an abscess was formed about three months after her amendment. This continued for upwards of *a year*, during which she suffered *extreme* and *incessant pain* in the *knee bone*, extending down to the ankle. This affection terminated in *lameness*, and she was obliged to use crutches. She had tried sea-bathing, from which she had derived partial relief from pain, but her *lameness still remained.* The muscular parts became *contracted*, the calf of the affected leg was *wasted*, and the limb rendered almost useless.

She commenced the course of Electricity on the 9th of September, 1816, and continued it regularly till the 12th of October, when her hopes were *realized;* as her *progressive amendment* had been gradually

On LOCAL DISEASES.

Many of this class of maladies, if minutely investigated, will be found to be *only local affections*, arising from a *disordered state* of the system; and a *constitutional predisposition* to organic disease. Those indeed which are *accidentally* occasioned by *external injury*, may justly be called *local diseases*—such as *burns*, *scalds*, *bruises*, *sprains*, *&c.*—The two first of these, cannot require the electric excitement, but the two last, have in my practice been often successfully treated, and perfectly cured. The following cases will serve as a practical illustration.

CASE 1.—Susan Shepherd, ten years of age, was brought to me by her father, to procure my aid for the removal of her lameness. This child, in running, had *sprained* her leg to such a degree, that she became *quit lame* for some weeks. He had tried all the ordinary remedies within

his reach, without any benefit—the tenderness and contraction still continued to render the limb immovable, but by an *acute feeling* of muscular pain. I employed the electric vibratory current for a few days, which not only *completely removed* the *pain*, but also the *rigidity* of the muscles.

CASE 2.—In June 1817, a young Lady who keeps a respectable preparatory school, was recommended to me, by Mr. B—, Surgeon to a public Institution. This patient met with a serious accident, which had nearly proved fatal. In going into a dark warehouse in the city, in which a small trap-door had been improperly left unshut, she fell into the opening, but was prevented from going through by supporting herself on each side by her arms. In this condition, she remained, until her cries brought some persons to her assistance. When she reached home, she found her arms very much *bruised*, and on the following day, they became so *stiff* and

painful, that she could hardly move them. Shortly after, the fingers and thumb of the right hand became *completely paralyzed*. For the cure of this accidental and local disease, every *topical* means were judiciously employed without any perceptible advantage. The mode in which I excited the affected parts, was found by the patient both *mild* and *efficient*. The electric current removed the *extravasated* blood, and restored the *muscular* and *nervous power*—the pain subsided, and the *use* of the fingers and thumb were perfectly regained.

In Chilblains, Sore-throat, Hoarseness, Tooth-ache, and other local affections, the electric stimulus is an efficient remedy. The *late* Mr. Lowndes, of St. Paul's Church Yard, published a pamphlet, in which he has reported his successful practice, in these, and other similar cases: but I have never employed the electric stimulus in these *slight ailments*, where *simple means* may be *more easily*, and as *effectually* applied. In tooth-ache, a mo-

dern dentist ascertains by the electric fluid, the decayed tooth; and if so, the same stimulus cannot remove the pain occasioned by caries tooth. Certain it is, that in a *rheumatic* affection of the jaw, which occasions an *acute pain resembling that* of tooth-ache, the electric excitement, has in many instances, in my own practice, been productive of *immediate* relief.

CASE 3.—A middle aged Lady, of a scorbutic habit, who had also been subject to rheumatic attacks, was in consequence of sitting for a *few* minutes in the draft of a cold air, suddenly siezed with an acute affection in the *jaw* and *cheek*, extending to the *temple*, *ear*, and *crown* of the head. The pain was extreme, her head became giddy, and the gums acutely affected with a throbbing sensation. She supposed her complaint to be tooth-ache, and came to me for relief from Electricity. As I had reason to believe it was a rheumatic attack, I insulated the patient, and passed the electric current through the affected parts,

which gave her instant relief. This, with an embrocation employed during part of the night and following day, fully effected a cure.

CASE 4.—Mrs. D——, Strand. had been subject to tooth-ache, and while, in a paroxysm of pain, had applied to me for relief. After ascertaining that the pains were *rheumatic*, I applied the vibratory impulse of Electricity in different directions, when she obtained a *profuse perspiration* about the head, the relief was instantaneous, and she was effectually cured. In consequence, however, of imprudent exposure to cold, she was a few months afterwards, siezed with the same complaint, and by the same means, applied but *once*, was again completely restored.

Broncocele, Wry or Derbyshire Neck.

Electricity, has according to the reports of some enlightened practitioners, cured these diseases. To this testimony,

however, I cannot add my own, having never in my experience, met with a case of the kind, that had any thing like a *fair trial.* The patients, that I have met with, labouring under these complaints, attended me only a few days, so that I had no fair and full opportunity of deciding on the efficacy of the remedy ; but reasoning from that *analogy*, which points out the *affinity* of disorders, I am inclined to think, that Electricity *well deserves to be tried*, when other means, fail of producing a cure.

The PARTIAL OR TOTAL LOSS OF SIGHT AND HEARING, by defective energy in the nervous system, and paralysis of the optic and auditory nerves, have been already alluded to and illustrated by a class of cases. But there are *other diseases* of these organs, arising from causes which produce a *morbid affection*, or a *mechanical obstruction* to the powers of vision, and the perception of sounds, that deserve to be noticed. In the early stages of CATARACT, Electricity, if properly employed, may, I

think, prevent the farther *opacity* of the *chrystalline* lens; but I have not found it *efficient* in the removal of the disease. *One case only*, of this kind, has afforded me a *fair* trial of Electricity. It was that of a Lady aged sixty, who, contrary to my opinion, urged me to try the powers of Electricity for the restoration of her sight, but after some weeks experience, she was convinced she had derived *no* benefit from its use. About a year afterwards she became totally blind, and then the operation of extracting the *Cataract* was successfully performed by Mr. E—, of Bristol, an Oculist of great skill, and high reputation.

In Fistula Lachrymalis.

CASE 5.—The Rev. — W—, who, in the Summer of 1818, was a patient of mine for a paralytic attack, stated to me the case of his daughter, a young Lady about eighteen years of age. He said, she had for more than a twelvemonth past, been troubled with a *morbid discharge* from the

right eye, which kept constantly oozing into the lower eyelid, forming itself into a ropy substance. She was almost *constantly* employed in wiping off the accumulating matter collected under the eye. On examining the eye, I found the lachrymal duct considerably *obstructed*, and somewhat *inflamed*, with a *small ulcer*, from whence the *matter* oozed. I could not speak confidently on the case, being the first of the kind that had occurred in my practice, but from the known electrical influence on the secretary system, I rather anticipated a favourable result, and at the request of the father, she consented to try the experiment for a few days. In the first instance, I placed the patient on a tin plate, and by a metallic point, directed the electric fluid to the corner of the eye. She felt a grateful sensation, a glow was produced in the seat of disease. On the following day she expressed her surprise at the *benefit* she had experienced, as she had then found *no necessity* to resume the disagreeable task of *cleansing* the eyelid. In a few days, the

topical inflammation subsided, the *ulcer healed*, and the affection was *entirely removed*. It is a singular fact, that, when I insulated the patient, and drew the electrical fluid *from* the system through the affected duct, which I tried in a latter experiment, there was an *increase* of the malady; but when I resorted to the *former mode*, the amendment was *progressive*, and the relief *complete*.

On Deafness from Obstructions, &c.

The injudicious and empirical treatment of the disorders of the ear, though carried on under the sanction of names, to which ignorance and credulity have attached the title of great, should not be overlooked, because it has a pernicious tendency. I therefore wish to caution the uninformed victims of this defect, against the adoption of violent *local* remedies, always of *doubtful*, and often of *dangerous* effect. The truth of Mr. Abernethy's opinion, of the evils likely to result from making the diseases of the organs of sense, distinct branches of medical science, daily experience only tends to confirm. This remark is not intended to apply to the Surgeon-oculists, whose operations in order to be perfect, require *constant practice*, and *great manual dexterity*, but to a certain class of Aurists, whose only skill extends to syringing the ear, extracting a little hard wax from it, and pouring into it oleaginous

or spirituous stimulants. In the cure of the disorders of the ear, the knowledge of its anatomy and physiology is certainly a qualification, but not the only one required for the judicious treatment of the diseases of that organ. The sciences of pathology and medicine are also unquestionably necessary, otherwise those disorders to which the ear is subject will be treated merely as local maladies, arising from accidental causes, without any regard to the general state of health. That this has frequently been the case, I may safely assert on the testimony of numerous respectable individuals, who have from time to time consulted me in cases of deafness; and who have made heavy complaints of the enormous expenses they have incurred, by a mode of treatment which had eventually proved wholly inefficient. That there are some disorders peculiar to the organs of hearing which require *surgical aid*, is an undeniable truth, but from an experience of more than eighteen years, I can confidently affirm that these sort of cases will

be found *comparatively few*. The more frequent causes of deafness fall *more immediately* under the *province of the Physician and Surgeon-apothecary* than the *Surgeon-aurist*, or *operative Electrician*.

Among the numerous applications from persons labouring under deafness, I have found very *few* instances which require topical remedies, the diminished sensorial power having originated either in *dyspetic*, *hepatic*, or *nervous disorders*, and were therefore, in slight cases, remedial under the *ordinary treatment* of the *general practitioner*; but in long-continued visceral derangement and extreme general debility, with a correspondent defective energy of the auditory nerves, and an *obstructed eustachian tube*, I have successfully employed the extraordinary agency of Electricity and Galvanism. In the most common cause of deafness, that arising from *redundant* or *indurated* cerumen, the simple prescription of the celebrated Dr. Marryat, is, in my humble opinion, preferable to any other

solvent. 'A tea-spoonful,' says the Doctor, of warm water poured into the ears, and suffered to continue for a minute or two in them every night, will often produce extraordinary effects. This is a more expeditious solvent of the ear-wax than upwards of *seventy other menstruums that were tried.* Let a pinch of the following snuff be taken immediately after:—Take of white hellebore root, a scruple, and euphorbium, two grains—a sternutatory powder.' The Doctor adds, 'that if warm water will not remove deafness (this species of it,) after using it some weeks, nothing that is *put into the ears* will do it.' But in deafness originating in a disordered state of the digestive organs, or of the nervous system, the *use of the syringe*, or the employment of *topical remedies*, have far *more frequently* been productive of *harm* than *good.* In such cases the ailment arising from a constitutional cause, no more belongs to the department of a *Surgeon-aurist*, or *operative Electrician*, than gout to that of a Chiropœdist.

CASE 6.—Alexander Stewart, aged thirteen, then residing with his father, a gardener, near Southampton, was recommended to me by Messrs. Randall and Son, Chymists. This boy's general state of health had been bad, he had been subject to cold of the head, and to vitiated cerumenous secretions, occasionally hard and powdery, and at other times limpid and offensive. The tympanum was affected, and he had the perception of a constant tremulous noise in both ears, which were alike incapable of hearing the tick of a watch at the distance of a few inches from the head. He could inflate the tympanum, for in blowing his nose, he felt the drum of his ear pressed outwards—there was no wax in the auditory canal.

As the patient, when he came to me, was then tolerably well, I employed no other remedy than Electricity, to give tone to the torpid organ, and to stimulate the cerumenous glands. I commenced these operations on the 1st of August, 1816,

sending a current of Electricity by a glass tube through both ears, for the space of ten minutes. This mode was twice repeated, and after the third application, his ears felt comfortable, and he had a discharge of wax from the right one, which was of a *bright yellow* colour, and of a *proper* consistence. On the 6th, I varied my mode in the fourth operation, for with the current I employed gentle sparks to the tympanum, the good effects of which were soon felt, for on the following day, he said he *heard better*. I increased my power of excitement in proportion to his acquired tone, and the organic capability of re-action; and after three more applications to the 13th, some wax was also discharged from the left ear. In the four subsequent applications, he felt little improvement in his hearing—the wax was found to increase in his ears; but on the 30th, he stated that he could hear *very well*, and that both ears were alike restored. Of the truth of this statement I was fully convinced, for he gave me proof that he heard me whisper

distinctly from the end of the room, by repeating my words.

On the 3rd of October, he applied to me again—his acquired powers had then began to decline, from a violent cold he had taken. I found the cerumenous secretion in the ear hard, a complaint, which might perhaps been removed by an injection of warm water. I determined, however, by passing the current through the auditory canal, to make a trial of the powers of Electricity in *dissolving this hard substance*, and which after five applications, fully succeeded. The mechanical obstruction was completely removed, and on the 23d, he was perfectly cured of a deafness, that had been of *seven years* continuance. I saw him again months afterwards, when his hearing still remained unaffected by any relapse.

Since that time, I have had repeated proofs of the powers of Electricity, in *solving indurated wax*, and *removing* that

obstruction to the undulatory motion of sound; but as the process requires repetition, and the remedy is tedious and slow, the prescription of Dr. Marryat, is more suited to such a case, than so powerful an agent as Electricity, which might be more usefully employed, in subduing formidable maladies*.

CASE 7.—Lieut. H—, Royal Navy, Hill Cottage, aged twenty-five, was brought to me by Mr. C——, his Surgeon, for my opinion on his case, of which the patient gave the following account. He had, he said, about ten or eleven years ago, taken a violent cold in the head, and he soon afterwards became deaf of both ears. This complaint was preceded by great pain in the ears, which according to his sensations

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* Many cases of this kind, attended with a relaxation of the tympanum, have been connected with paralysis of the auditory nerves. For some of these, the reader is referred to those cases, under the head—DEAFNESS, PALSY of the AUDITORY NERVES.

indicated inflammation, a conjecture, which appears to have been correct, from the bleeding and blistering, which were then resorted to with advantage.

At the time he came to me, his general health was so good, that no constitutional remedies were wanting, and as he had subsequently to his loss of hearing, recovered the capability of the right ear, I directed my attention to the other exclusively, which was found not only defective in secretion, but in power. When the right ear was closed, he required very loud speaking to make him hear. He did not complain of any noise in the ear—he could inflate the tympanum, and could hear the ticking of a watch while in the mouth, or when its handle was placed on the upper or lower teeth. The torpor of the parts was great, and required *pungent excitement*, which I *administered* for the first time on the 8th of July, when he felt an agreeable warmth, and some tingling in his ear. On the 9th, after the second

application, he said, he heard better. After the third operation, the tympanum became more sensibly affected by the electric stimulus, and a slight discharge of wax was produced, which had all the appearance of recent secretion. On the 11th, he said, he was considerably better. On the 12th, he was much improved, and heard me speak to him in a low tone of voice. He now remarked, that the electric stimulus had produced great irritation. The operation was discontinued on the 13th, and a few days after he called to express his satisfaction for having derived the greatest benefit from the remedy I had administered, and lamented the occurrence of an unexpected event, which compelled his immediate return to Ireland, but assured me, that should he again require my aid, he would certainly visit me in London, being fully satisfied of the efficacy of Electricity, when properly employed.

When deafness does not arise from a *defective energy* of the auditory nerves, it

may be occasioned by a great accumulations of cerumen, or a *relaxation* of the membrane, called the *Tympanum*, which is designated the drum of the ear. When this is the case, and the nerves are not much in fault, which may be easily ascertained, the electric fluid may be properly applied to *give tone to the relaxed membrane*, or to remove the *matter accumulated*. The former is frequently occasioned by *violent concussions* of air, and the latter *from colds*, producing *inflammation*. The diminution of hearing in these cases are indeed but *slight*, when compared with that which is produced by an *obstruction* or *closure* of the *eustachian tube*. This species of deafness, arising from a cause which *mechanically* compresses the membranous passage for the admission of air into the internal cavity of the ear, may be the consequence of *constitutional disease*, affecting the parts contiguous to the orifice of the tube, as an enlargement in the glands, or an ulcer in the fauces. These again may occasion an accumulation of

morbid matter in that tube, or diseased action causing an adhesion or closure of the tube, which is incurable. The well known experiment of Mr. A. Cooper, of puncturing the tympanum for the admission of air into the internal ear, from repeated failures, has been abandoned. Nor has Mr. Grosvenor's plan of forcing smoke into the eustachian tube, though successful in some cases, generally met with a better fate. My opinion is, that where it has been successful, that *success* was more owing to the *efforts* of the patient, than the *virtues* of the remedy. In a *plethoric* habit, where there is a *determination* of blood to the head, the experiment may be productive of *mischief*, and *must be attended with danger*. *Brushing* the throat, too, or taking an *emetic*, are remedies, which at best, are but partially applicable to the disease of *deafness*. They may excite the *mechanical* and *involuntary* motion of the whole of the fauces, and if the obstruction of the eustachian tube be near its *external orifice*, the deafness may be removed, but

if the whole soft part of the *passage* be alike in a state of *constriction*, these limited remedies can never be so beneficial as the *electric fluid*, which *acts instantaneously throughout the whole of the membranous course*, and which will often force any obstruction to give way, so as to admit air into the internal cavity of the ear.

The rules for forming a correct judgment on the various characters of this malady, as laid down by modern Aurists, have in my experience, proved *erroneous*. It is easy to give to *each kind* of deafness a *nomenclature*, but it is experience *alone*, that can enable us to *decide* on its propriety. If, indeed, *deafness* could only be found under the *character* and *limitations* they have assigned to its range, their definitions might be tolerably correct; but when the malady is found to exist in combination with *various causes*, with *symptoms* of *nervous*, *dyspeptic*, *hepatic*, and similar derangements, disturbing or impairing sensorial power, by a chymical change, or a

mechanical obstruction—their classification must appear most *imperfect.*

On this subject I shall only further remark, that in those cases, where deafness is produced by *ulceration* of the tympanum, with purulent discharge, a *constitutional treatment* ought to be resorted to, under the direction of a Physician or *Medical Surgeon,* whose *practice* and *views* are not confined to *one inlet of sense,* as an *isolated* part of the human body. There are, however, a few symptoms, which designate the different kinds of deafness that have been alluded to, which will be noticed in the statement of the following cases.

CAES 8.—Mrs. H—, a respectable Lady, about fifty years of age, residing in Holborn, was recommended to me by A. C—, Esq. in the summer of 1818. She had not enjoyed a good state of health for some years, was scorbutic, and exceedingly nervous. She became deaf from the effects of an herpetic eruption in the left ear,

which was at first confined to the auricle, and then extended to the meatus. The auditory canal became so much closed as to require surgical aid. The operation of extracting the accumulated matter of obstruction, was performed by Mr. C——, who may be ranked as the first operative Surgeon in Europe, but still she continued deaf. A few applications of Electricity, in aid of what had already been done for her, completely succeeded in restoring the patient to her perfect capability of hearing. About a year had elapsed, when I heard again of this patient by Mr. A——, her family Surgeon-apothecary, from whom I received an account, of her continuing to enjoy perfect hearing.

The succeeding cases are given as examples of *deafness*, arising from obstruction of the eustachian tube; at the time they happened, they were correctly recorded, and I present them to the reader in preference to those of more recent date, which the pressure of professional

applications, would not allow me leisure to register so *minutely*. They will fully exhibit the principle and effects of Electricity, when skilfully applied by the practitioner, and properly attended to by the patient.

CASE 9.—Mr. A—, a respectable tradesman, residing in Southampton, visited me on the 6th of September, 1616, to obtain my aid. This patient was of a spare habit, nervous temperament, and active turn of mind. From incessant attention to his own private concerns, in which he had carried his anxieties too far —combined with some recent family afflictions, he had not only greatly distressed his mind, but brought on a disordered state of his digestive organs, and extreme nervous debility. In this condition, he gradually became deaf of both ears, and had continued so for some months.

He could not hear the ticking of a watch, but when close to the ears. There was no cerumenous secretion in the meatus,

he could not inflate the tympanum, but he heard the watch when placed on the upper and lower teeth. This case appeared to me to be a general relaxation of the system, particularly of *parts* contiguous to the internal ear. Supposing therefore his case to be a STRICTURE of the eustachian tube, I employed the electric stimulus in various modes, and passed the current through it on four succeeding days, and twice between the 19th and the 23rd, with some degree of improvement. The patient was at this time obliged to go into the country. Before he went, I told him I considered his case to be of such a nature, that the benefit he had already obtained might lead to a sudden recovery.

I saw him again in a fortnight after, when he expressed his gratitude for his perfect recovery. He then gave me the following particulars. He said, after he had got a few miles out of town on horseback, as he was ascending a high hill, he was greatly alarmed by a sudden noise like

the report of a gun. He addressed a person he met on the road to know if he could account for the noise, when the stranger's answers convinced him that he had effectually recovered his hearing. I have only to add, that he continued to enjoy his sensorial powers, and an improved state of health.

CASE 10.—Miss T—, residing near Southampton, about twenty years of age, of a plethoric habit, was recommended by Dr. M—, to my care. I was informed, that she had been deaf for six or seven years, which had been at first occasioned by a brain fever. Every possible attention had been paid to her case, by the most eminent Physicians and Surgeons of the metropolis, *most* of whom pronounced her malady *incurable*, as her deafness was succeeded by a *purulent fœtid* discharge. Mr. A. C—, thought otherwise, and proposed puncturing the tympanum, to which she would not submit. Dr. M. suggested a trial of Electricity. At the time this patient applied to

me, she had a slight discharge from the ear, which appeared to me to be *vitiated* secretion. The deafness was *complete* in the *left ear*, and *partial* in the right.

I therefore undertook her case, and commenced the operations on the 1st of July, and continued them daily till the 8th, when the morbid secretion ceased, and she thought she could hear a little better. She then discontinued her attendance on me for a few days, on account of her peculiar delicacy of feeling. She underwent but one operation more, for on the following day, as she was on her way to my house, she was *suddenly startled* by a great noise, when she hastened to inform me of the circumstance. I congratulated her, on her newly acquired perception of sounds, of which she was now fully convinced. There was therefore, no further necessity for her *resuming* the electrical application. At first, she heard only in *confused* sounds, but in a few days, the hearing of both ears, became perfectly natural. I was in the

habit of seeing her occasionally, and hearing of her, for several months afterwards, when she still continued to possess unimpaired sensorial powers.

CASE 11.—This is an extraordinary cure of an obstruction or *constriction* of the Eustachian Tube—and deserves particular notice—Mr. Joseph Ridges, Wheelwright, residing at Marchwood, 76 years of age, of a very *spare habit*, much emaciated, labouring under the infirmities of old age, *bent down*, *bald headed*, and toothless; but nevertheless in the possession of tolerable health. He applied to me on the 2nd of August, 1816, and stated that he had become deaf in consequence of having been buried in snow, for several hours, about *forty years* back, and that by the left ear, he *never after heard any sound whatever*. He began to loose the hearing of his right ear about *twenty-three* years ago; and in his then state he could not hear the ticking of a watch, either *in his mouth* or when placed close to his ears. With the

greatest efforts he could not *at all inflate* the tympanum of either ear. Upon the whole, I conceived this case to be a hopeless one; but he having known several instances of the recovery of deaf patients who had been under my care, he determined to make a trial, though I assured him there was not the least prospect of his obtaining any benefit.

He attended regularly for eleven times, from the 2nd of August, to the 28th, during which time, I employed Electricity as a mechanical stimulus along the course of the eustachian tube. On the succeeding day he called again; and my servant in his usual way vociferated in his ear, 'How do you find yourself?' he smiled and said, 'you need not hollo so loud, for I can now hear as well as you can.' I confess I was astonished at this declaration, and on making enquiry, he gave me a circumstantial detail of particulars attending the *sudden* and *perfect recovery* of hearing in that ear, which had been *totally deaf* for

forty years. From this extraordinary success, I was encouraged to proceed with the other ear, and had the satisfaction of restoring that also, in a *sudden manner*, a fortnight after*

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* The particulars which he communicated were---that he went to bed at his usual time, slept soundly, but awoke at 3 o'Clock in the Morning, in great agitation of mind. His sense of hearing conveyed a rustling noise, and sounds resembling those produced by several persons running up and down stairs. He immediately awoke his wife and family, with the alarm of Thieves! when they were assembled, he proceeded to search every part of the house, under the notion that he was beset with Robbers; but on finding neither door or windows open, he insisted on examining his out-houses and premises, quite satisfied with the correctness of his perceptions. Their being no appearance of Thieves, he was puzzled to account for this singular delusion, when his wife, having recovered herself a little from the consternation into which she had been thrown by this sudden and terrific alarm, hastily observed---'You have certainly recovered your hearing'! In an instant, the fact struck him so forcibly, as to expel all his doubts. 'I have indeed'! was the reply, 'for I can now hear you all speak plain enough'! Though so late in life, he was so delighted with the recovery of his long lost hearing, that, as he said himself, he felt at the moment, as if overpowered with excess of joy.

This singular recovery made no inconsiderable noise among the patient's connexions, and as he was anxious it should be given to the public, I have already published this surprising case, with his name and abode. In making, however, this communication to the deaf, I by no means hold out that my remedies will prove *equally efficacious* in all cases, but only give this as a *decisive proof*, that an *obstruction of the eustachian tube, from accidental causes, may exist for a series of years without its being wholly obliterated;* and that the mechanical impulse of Electricity *may* produce a beneficial result, if no morbid changes from inflammation have closed that tube, which is essential to the perception of sound. In cases where a *partial obstruction* of the eustachian tube had arisen from a *deranged state* of the system, and a morbid affection of the ear, the influence of *Galvanism*, as a constitutional and local remedy, has in *numerous instances*, in my own practice, perfectly restored the patient to the blessings of both *health* and *hearing*.

These Cases shall be given under the head Deafness—in my remarks on Galvanism.

Though I have confined myself to the statement of successful cases, yet I have not wholly overlooked others of the same class, which from peculiar circumstances had failed. If I had intended to address the medical profession *only*, I should certainly have detailed many *unsuccessful* instances, being persuaded, that to men of *science* and *investigation*, these very *failures* would have *developed* the *obstacles* to electrical agency, and have afforded as *decisive* evidence of its powers, as *any* of those where cures were obtained. On this view of the subject, I could detail many singular facts, which would, I am persuaded, *add* considerably to the general stock of medical knowledge, on the causes, progress, and termination of various diseases. With the view of calling the attention of the faculty to this subject, I may on a future occasion, when opportunity offers, publish these facts in one of the medical journals.

The efficacy of Electricity in the diseases which I have enumerated, is not only supported by the evidence of facts here disclosed, but also by the opinion of the most philosophical and scientific practitioners, who have written on the subject—all of whom concur in asserting its utility, as a remedy of great importance to mankind. To these may be added, several eminent Physicians and Surgeons, both at home and abroad, who in their practice have prescribed the use of Electricity in a variety of cases, both medical and surgical—and *numerous* are the persons even in *this* metropolis, who have derived the greatest advantage from this remedy, which notwithstanding is too seldom resorted to, except in cases of a *desperate description.*

On a *review* of the whole of these cases, it may be justly inferred, that though the medical powers of Electricity are far more efficient than ordinary remedies, yet they are beneficial only in certain classes of disease, and that they *cannot*, and *do not*

apply to every stage of malady, *even* of the class for which they are adapted. That much must depend on constitutional temperament; on the age of those affected; on the state of the system; on the mode of its administration; and a variety of other circumstances.

First.—*Those disorders which arise from exhaustion*, or *defective energy*, and not from *irritation*, or *oppressed* powers, constitute the class of cases in which Electricity is *most beneficial;* but it is especially applicable in *torpor* of the vital functions, occasioning a diminution of nervous and muscular action, whether arising from *too great* a previous exertion of the intellectual or bodily powers, or from a course of *violent* medical treatment, which together with the disease, have shaken the constitutional strength of the patient.

The electric principle is peculiarly serviceable in cases where it is necessary to resuscitate the *latent* and almost *sunk*

energies of animal life. But where a *super-irritation* exists in the system, and an *indirect debility* has the semblance of a *direct one*—where the sensorial or moving powers are diminished by a *disorder of the digestive organs—depletion*, and not *repletion* is required. APATHY, and not SUPER-IRRATIBILITY, is the best criterion for electrical agency. Where the latter is found in a great degree, to stimulate would be as absurd, as to *load a sick stomach* with *high seasoned dishes*, or to pour down the throat of a man labouring under inflammatory fever, *a profusion of ardent spirits.* If *organic derangement* shall have taken place in any of the viscera, Electricity, like every other mean, is uncertain; but it is not a *little difficult* to discriminate between *functional* and *organic disease.* To this point the practitioner must direct the most minute attention, and modify his means accordingly.

Secondly.—*In diseases of a chronic description*, it is necessary to the successful

employment of Electricity, to ascertain whether the disorder be *primary* or *secondary*. Whether the symptoms be connected with an actual disease of the parts where they are seated, or whether the disturbance existing in those parts, be merely the products of some disease, the seat of which is in some remote quarter of the system. For to regard symptoms *solely*, without any reference to their cause, is *extremely hazardous*, and has often led to the most *disastrous results*,—whereas, on the contrary, an investigation into the cause of the indications of disease, is frequently followed by the most *successful results*.

If a malady be *sympathetic only*, the electrical excitement will do little good, without an attention to the *distant* disturbance; and where that disturbance consists in *excess* of power from *vascular fulness*, it must be diminished by evacuations, before this agent can be beneficially employed; but where *chronic congestion* occurs with actual loss of power, the constitutional tone

must be maintained under the electrical stimulus.

Thirdly.—*In cachectic and scrophulous diseases*, Electricity is a powerful and beneficial remedy. The particular symptoms which characterize the stages of these constitutional maladies, as well as the local affections attendant on them, ought always to be traced, not only to their *proximate* but to their *remote* causes. In mal-conformation or organic diseases, Electricity may possibly palliate the urgent symptoms. Where there is a constitutional predisposition from an hereditary taint, and where the accidental causes of improper diet, bad air, pernicious habits, and local disturbances have induced actual disease, and debility and emaciation are consequent, with a depraved state of the whole or a great part of the body—we ought to distinguish the character of the debility—if it arise from inflammation, venesection must first be used, but when from exhaustion, tonics, a regulated regimen, air, and exercise, toge-

ther with Electricity, will form a beneficial course of treatment. The peculiar properties of this agent as a *deobstruent* in removing obstructions of the lymphatic system, in effecting a resolution of *indurated* glands, in exciting those torpid organs to perform their functions, in increasing the circulation, and in stimulating the nervous system, will essentially aid the curative intention. But where great irritation exists in the system from inflammatory action, seriously affecting some deep seated parts, the electric remedy must be superceded by a correspondent plan of treatment, which soothes the excitable system.

Fourthly.—*In the local application* of *Electricity*, much depends on the respondent capability of the subject acted on: If the state of the system is not *adequate* to *local excitement*, it must be *oppressed* by the existence of *irritation*. The power of electrical operations, must be always *nicely balanced* to the *susceptibility* of the patient, and never exceed his power of endurance.

To illustrate these last remarks, which will be found of some importance, I would instance those cases of *Blindness* and *Deafness*, which are occasioned by paralysis of the optic and auditory nerves—*both* of which are really found to arise from *two opposite* causes, viz. *compression* of the nerves, or *defect* of their *energy*; the first occasioning an *obstruction* of nervous influence, and the second, an *exhaustion* of sensorial power. If the former exist, Electricity, instead of being beneficial, *may aggravate* the malady—but if the latter, its influence as a *tonic* application, must produce the most advantageous results, provided no *morbid* change shall have taken place in the *structure* of these nerves. But a topical treatment, without regard being had to the state of the *general health*—to the recovery of which, if lost or impaired, the practitioner should always direct his chief attention—if *this* I repeat be *overlooked*, all the efforts of the Electrician, however proper in *other* respects, will assuredly prove abortive, at least in the majority of cases.

The great evil has been, that many *injudicious practitioners*, have regarded *local affections*, as *local diseases*—an opinion, which though, in many cases, in accordance with the feelings of a suffering patient, is often very remote from the truth: For it is a well known *pathological fact* for instance, that defects, both of vision and hearing, are not unfrequently the mere consequences of some disease, seated in some distant organs which affect the *remote* parts by *sympathy*. The common delusion of considering local affections, as local *primary* diseases, has been productive of great gain to many ignorant practitioners, as well as to a *host* of empirics, who reckoning on the *credulity* of the public, have always at hand, an *infallible nostrum* for every ailment.

These observations have arisen from a general review of the contents of these pages. They are at least plain, if they have no pretentions to the profound—those who have more leisure and discrimination

than myself will be able to throw many new lights on this interesting branch of medical science, a task which when ably and impartially executed, would be an obligation to *myself*, and render no *slight* service to the public.

VI. I proceed now to enquire into the *reasons*, which have opposed the more *general adoption* of Electricity, in medical practice. In adverting to this *delicate* part of my subject, I need make no ostentatious display of *motives*, where there can be no just reason, for calling their *purity* in question. In the *first* edition of my Remarks, I have not been backward to acquit myself of the obligations by which *some* of the Members of *both* Colleges, from their *liberal* recommendation of patients, have been pleased to sanction my practice. But in the discharge of a paramount duty which I owe to the public, I must take the liberty of observing, that there *has existed*, and still *exists*, among the *faculty* in general, an *aversion* to the

the ignorant, and obstructing the benefits, which the afflicted might derive from medical Electricity. Nothing, however, can be more unfounded than this representation of the effects of Electricity; but if even a *transient pain* were to be endured, who would set *so trivial a suffering* in competition with *that* state of health, which alone can render life, a condition of *real* enjoyment? But such an opinion does not deserve a serious reply—if it did, I would only say, read the whole of the cases in this volume, and amidst all the diversities of disease, which are there exhibited, point out one in which the patient complains of violent shocks, or any *feeling of torture*. On the contrary, the operations will be found to have been productive, *almost* universally, of a *glow of heat*, peculiarly grateful to the feelings of the patient.

Another circumstance may be adverted to, which has not a little retarded the progress of medical Electricity. Among the very few who have a taste for philosophical

pursuits, there are still *fewer*, who have directed their attention to the *practical* benefits resulting from its use. They have indeed, *philosophized to surfeit* on the various *theories* and *experiments* of Electricity, but more with a view to afford *entertainment* to the curious, than *relief* to the sick. In their ponderous volumes, *much* has been written, but for any useful purpose, very *little* has been said. Hence the public have not been led to regard the medical powers of Electricity, of so much importance, as to *claim* their *attention*, or to become a subject of their *enquiries* or *conversation*. Those few individuals, who from a view to professional advancement, have treated on this subject and enforced their opinions by a collection of cases, have cast but *little new* light on the nature and powers of Electricity. *Suspicion*, the common offspring of a *weak head*, or an *unamiable heart*, considers works of that sort, as mere *lures* to catch the ignorant, and is little disposed to credit any testimony, no matter how strong and respectable

in favour of medical Electricity, or any other discovery, however important, that can by *any possibility* be traced to a *selfish* source. Hence the writers, aware of this *unworthy feeling* and *vulgar prejudice*, have contented themselves with addressing their observations to invalids, who in *their* state of suffering, seek only a *restoration to health*, without at all regarding the *philosophy* of a remedy, that has realized their wishes.

There is another class of persons, subjects of *chronic diseases*, who having had for years recourse to various medical means for recovery without success, have when their disorders are *confirmed*, and when *organic derangement* has rendered relief hopeless, vainly sought at last, a remedy, from Electricity. Such persons, have been generally recommended, by patients who had themselves experienced an unexpected and extraordinary cure; but amidst the *delusions* of hope, the *dissimilarity* of the cases is *overlooked*, the powers of medical

Electricity are *overrated*, and it is found, that though they can cure what other means cannot reach, they are not competent to *create* what is wanting. There is another description of persons still more unreasonable, who being disappointed in their *extravagant expectations* of a *sudden cure*, become the *victims* of their own *impatience*, and yielding to a feeling of despondency, fly to some other remedy; but to *no means*, will their *fretful peevishness* allow them to give a *fair trial*. Of this kind, I have met with many instances, not only prejudicial to my own practice, but of *gross injustice* towards *several* of the *most judicious* practitioners. Thus medical Electricity, or any other remedy, may without a fair trial be reputed *unavailing*, by the reports of *these weak, wavering, and restless invalids.*

These, and other obstacles, to the general adoption of Electricity, are but trifling, when compared with the formidable opposition it has for years met with, from the *professors* of the healing art.

This has been particularly the case in this Country, though the same conduct has not prevailed on the Continent, where Electricity is very generally employed, as a medical remedy. The philosophy and *modus operandi*, have been so little attended to or understood, that the practitioners who have employed it as a remedy for human diseases, by confining themselves to the administration of shocks, have brought Electricity into discredit. Even the amiable Franklin, the *Father* of the science, being a stranger to its medical powers, in his benevolent anxiety to cure the prevalent diseases among the American Indians, though he succeeded in some instances, yet gave such *tremendous* shocks, that many of them fled from the remedy, as from an earthquake, and took shelter in their native woods. With all these disadvantages, still the surprising cures, which were performed even by the *indiscriminate* use of Electricity, acquired for this new philosophical remedy, a reputation, which awakened the jealousy of some medical pro-

fessors, who employed the whole of their influence, to counteract the popular predilection in its favour. With this view, the cures were *disputed*, and the beneficial effects of Electricity, in *any case denied*, though attested by *enlightened* men of the *strictest integrity;* among whom were to be found, *philosophers*, *divines*, and *some* of the most eminent, of the medical profession.

At last, Dr. H—, of Shrewsbury, the champion of the Anti-electricians, undertook to ascertain the truth by experiment; and to report to his brethren the result of his discoveries. Accordingly he published an account of his experiments, in which he stated he had carried them to the fullest extent on paralysed limbs, but without success; and these failures he had the modesty to offer as proofs *infallible*, of the pernicious effects of Electricity in medical practice. Under the sanction of this man, who could scarcely be acquainted with the *principles*, and certainly not at all with the *modus*

operandi of electrical treatment, multitudes became converts to his opinion—thus demonstrating the truth of an observation, 'that where private interest is permitted to influence the judgment, reason and argument may be employed in vain.'

The causes which impede the progress of Electricity in *the present day*, are the *indifference* or *opposition* of the faculty. It is no less singular than true, that there are to be found many intelligent private individuals, *better* acquainted with the philosophy and medical uses of Electricity, than most of the faculty. It has been suggested to me by those whose veracity is unquestionable, that many practitioners, and some too of *high sounding names*, have *never* directed their attention to the science, and of course, it cannot be expected that they should recommend a remedy, of which they know *nothing*, but from common report. Others of the faculty, having known the evils which have resulted from the injudicious employment of Electricity by *incom-*

petent hands, have therefore determined not to advise its application in *any* case.

Among the general class of practitioners, which unite the branches of *Surgery*, *Midwifery*, and *Pharmacy*, and which require constant attention and daily visits, it is scarcely possible that the science of Electricity can be either cultivated or combined with the medicinal remedies of ordinary practice. From this cause it is, that humble mechanics, and other uneducated individuals, have undertaken the administration of Electricity, under the direction of some Apothecary, who to all practical purposes, know as much of the *modus operandi* of electrical application, as *their Grinders at the wheel.* Professional jealously cannot brook the indignity, which some Electricians of this stamp have cast on the healing art.

Numerous cases have occurred in my own experience where medicines had *completely* failed, and in which Electricity as

completely succeeded. In *such* cases it has frequently happened, that the success has been ascribed by the patients, to the *hand* that operated, rather than to the *head* that directed the means. *This* way of decrying and mortifying merit, has not a *little* encreased the list *of opponents to Electricity.*

I could, were it decorous, easily point to the conduct of some public and living characters, towards a meritorious individual, now no more; who was a regular bred Surgeon at one of the hospitals, and who was most unkindly treated by some of his medical brethren, because he had the daring hardihood of saving many a miserable patient from the tortures of the knife, by the application of Electricity. This success raised against him a powerful combination to run him down, as an empirical practitioner.

In the hospital and dispensary practice, Electricity has been most injudici-

ously administered. It has been consigned to improper hands—to persons who are strangers to its philosophy, or applicability in human diseases. The apparatus, too, generally used in those places, and where they are certainly most wanted, are mere *medical toys*, fit only to administer shocks —seldom kept in *order*, and as *seldom* employed: unless, as I have been informed on good authority, as a *diversion* for the *pupils*, who were sometimes *amused* by the infliction of pain on the *lazy* invalid, whose *continuance* in the house of affliction, had become *no* longer desirable—or on females whose delicacy of sex has been too often overlooked and *outraged*, in its *pretended* beneficial uses. That this was the fact some years ago, I state from the declaration of *one* of those very pupils, to *whom* was consigned the application of this remedy; but I should hope no such abuses at present exist in *any* of our public institutions.

The *venal* age in which we live, and the *mercenary trading spirit* which pervades

the whole circle of society, and which is but too *glaringly* conspicuous even in the more *elevated* rank of professional pursuits —have degraded the practice of medicine into a '*Guinea Trade*,' and rendered it subservient to the interests of a race of *petty venders* of *drugs* and *chymicals*. It is really lamentable, that medical men should be under the necessity of obtaining remuneration for *skill*, *attention*, and *anxiety*, from the *mere sale* of medicines. Had the Legislature interposed to wipe off this *reproach* from the practice of Surgeon-Apothecaries, the advantages resulting to both the practitioner and the afflicted, would have been found to be great and important.

Electricity being thus opposed, to the interests of Apothecaries, *cannot* be expected to meet from *them*, any thing like *cordial* encouragement. From *this* quarter therefore, and for *this* reason a writer of the last century, who was at once Historian, Philosopher, and Divine, anticipated the *most formidable* opposition to the *progress*

of medical Electricity. A contemporary had remarked—that the electrical method of treating disorders, could not be expected to arrive at any considerable degree of perfection, till administered and applied by the Gentlemen of the faculty. 'Nay then,' said he, 'all my hopes are at an end—for when will it be administered and applied by them? Not till the Gentlemen of the faculty have *more* regard to the interests of their *neighbours*, than their *own*. At least, not till there are no Apothecaries in the land, or till Physicians are independent of them!'

To this general censure, severe and just as it is in many respects, I am *bound* and *pleased* to observe, there are a number of exceptions. I know *many* respectable Apothecaries, who have exemplified in their dealings that *noble* spirit, which has *more* regard to the interests of their *neighbours* than their *own*. This exception too, applies with equal truth, to many *truly scientific* and *benevolent* Physicians and

Surgeons—but the censure, strong as it is, must remain in full force against those, whose *motives* of *action* can only be known to *omniscience* and to *themselves*.

Electricity is no less opposed to the interests of Surgeons and Physicians. A young practitioner, in prescribing this remedy, however applicable to the disease, would not find himself by so doing exactly in the high road to *fame* and *fortune*. His prescription would neither reach the *Apothecary*, nor *Chymist*, and with the *illiberal* part of his brethren, he would be stigmatized as empirical. Thus in the very outset of his professional career, his name would be blighted by *envy*. As to an established practitioner, it can scarcely be expected that he should be called in by an Apothecary, if *no* medicines are prescribed; and even a Surgeon, cannot hope to *add much*, either to his *profits* or *reputation*, by recommending electrical operations and transferring his patient *to the care* of another. The case has commonly been,

that those afflicted invalids who have resorted to Electricity, *were themselves the first to propose* to their medical attendants a trial of its powers. If the suggestion be not accompanied by a *strong desire* on the part of the patient, it is seldom acceded to till the *materia medica* is exhausted. Thus the application of an efficient remedy may be sometimes delayed till disease becomes incurable. But when the suffering patient is at last tired with the slow process of ordinary treatment—when all hopes of a cure are fled, he is then advised with becoming gravity, to try a *few* applications of Electricity, and if no good should *immediately* result, to *desist*, and go into the country, or to some watering place, where his medical guide usually visits in his summer excursions.

There are others of the medical profession, still less covert in their opposition to Electricity—who assign no reason, employ no argument in support of their opinions, but content themselves with a dig-

nified shrug of disapprobation, or with a scoul of contempt. That man knows nothing of human nature, who thinks that this kind of ridicule, coming from acknowledged authorities, can do little harm—it has such an influence on weak minds, as no powers of reasoning, no evidence of facts, can counteract. The poor patient, from the dupe, becomes the victim, till death too often closing the scene, dispels the delusion. It cannot be supposed that these remarks proceed from envy, or from any mean or selfish motive. If I preferred my *own* to the interests of *mankind*, I should have preserved a *political taciturnity*, and not have *run the risk of professional displeasure*.

These observations, however, have no reference to opposition founded on honest doubts, or even to ignorant misconception. If, where failure in electrical applications has disappointed the hopes of the patient, it can be shown, that it was wholly owing to the inefficacy of the remedy, such a

statement, right or wrong, is entitled to respectful attention. It may happen in such a case, as in many others, that while the premises are just, the conclusion is erroneous. To the objections of such an opponent, however much mistaken, I should listen with attention, and by calm reasoning, endeavour to remove his doubts, and even his prejudices.

There are unquestionably some men, enthusiasts in medicine, as well as religion —men, who against the plain evidence of facts, continue to believe in the almost miraculous virtues of a particular remedy, which though useful in some cases, yet when taken to excess, is in any case prejudicial, and often dangerous. It is in this point of view, I regard a late martyr to the use of *calomel*, for which he entertained so strong a predilection, and took in such quantities, that he laid, in his own case, the foundation of premature decay, and an early death. But the abuse of any thing, is *no argument* against its use—it only proves,

what indeed requires no proof at all, that *excessive indulgence* in that, which taken *moderately* would operate as a *powerful antidote*, may when used to excess become our poison. Before we can justly account for the failure of Electricity (or any other remedy) there are a *variety* of circumstances, which *previously require* to be *carefully* considered.

First, the nature of the disorder, the state of the patient, the circumstances connected with his constitutional temperament, and the applicability of the remedy to his case.

Secondly, Whether, if the remedy, has been applicable, due perseverance has been shown by the patient? Whether other medicines have been administered, which may have defeated the beneficial effects of the electrical excitement?

Thirdly, Whether the Electrical Apparatus were of a kind to do *justice* to the

operation, and the practitioner *sufficiently master* of the *modus operandi*, to produce the *desired* effect?

When these circumstances, connected with the patient, the practitioner, and the apparatus, are duly attended to, the failures of the electrical stimulus will be fully explained.

Though I am convinced by long observation, that medical men in general, from their education, habits, and deep responsibility, possess as *great integrity, practical virtue, and genuine humanity*, as any body of men—yet it is no detraction from their general merit to *assert*, that there are some, who are strangers to the influence of these feelings, and rather devote themselves to the *trade* than to the *science* of physic. It is by this class of practitioners, and this *alone*, that impediments of every kind, have been thrown in the way of medical improvement; and, who without *ability* to appreciate the powers of Elec-

tricity, have been *uniform* and *incessant* in condemning its use.

I could mention some curious anecdotes illustrative of these observations, but a sense of delicacy forbids the attempt. I would not *intentionally* wound the feelings of any man—besides, it is only with the *professional views* and *conduct* of these Gentlemen I am concerned, and in which the *public*, have a much *greater* interest, than myself.

Feeling the responsibility of that sacred trust of *health*, reposed in my humble judgment, I am resolved *never* to place any patient under the operation of Electricity, *whoever may recommend him*, unless I feel a rational conviction, that my remedies are adapted to his case, and that a beneficial result is at least probable. Though I may feel the highest respect and particular obligation, to those medical Gentlemen, who may from time to time, send me patients for electric and galvanic operations, yet I

expect to be allowed to exercise my own private judgment, and if I find the cases not adapted to my means of cure, or that the diseases have past that stage, where recovery might be anticipated, I shall feel it my duty to decline any professional interference. To the truth of this declaration, I could easily muster a host of credible witnesses, whom in their applications to me, have met with the same painful refusal to their solicitations.

Before I conclude these remarks, I cannot sufficiently reprobate the use of those Electrical Machines, which are manufactured *solely* for the *purpose* of *gain*, under the pretence of supplying an efficient apparatus for medical purposes. This base mercenary *spirit* of trade, passes off *insignificant Electrical Baubles*, as efficient machines, though they can administer nothing but shocks. Thus, for the sake of *extravagant* and almost *extortionate* profits, are these medical playthings, imposed upon the public.

Sensible that even experience, combined with the greatest skill, can be of little avail without a perfect apparatus, I employ a machine of the greatest magnitude, the cylinder of which is the largest that was ever made in this metropolis, and which on the whole, is in *all respects* completely adapted to the purpose. With this machine, so constructed, I can, by commanding the *combined operations* described in the preceding pages, produce such beneficial results, as it would be absurd to expect from those in common use; and that too, without subjecting the patient to either pain or danger.

In short, after all the objections that ignorance or prejudice have, or can urge against the efficacy of Electricity, I may honestly affirm, that *no* medical means have yet been found so EFFICIENT, or so EXPEDITIOUS, in the cure of diseases to which its powers are applicable. With equal sincerity I can safely add, that few remedies are so agreeable when adminis-

tered with judgment, and none attended with less mischief, when even *improperly* applied. This is a consideration of no trivial import in favour of Electricity. Can so much be truly said of any other known means in medical practice? What *mighty* mischiefs have been produced by the *lancet*, *leeches*, *blisters*, and *cupping!* What direful effects have resulted from the use of that herculean remedy, MERCURY,! What fatal consequences have followed the administration of OPIUM, by unskilful practitioners! Let these circumstances be duly considered, and the only conclusion which a candid and judicious mind can draw from the whole, will be—that this philosophical treatment, by electrical agency, is one of 'heaven's best gifts to suffering humanity.' For the truth of these observations I need not trust wholly to my own experience, though that has neither been *short* nor *limitted*—my opinion is fully borne out by the decisive testimony of many eminent writers, whose names will be inserted at the end of this book.

Should this humble volume, fall into the hands of those, who with a competent portion of philosophical and medical knowledge, possess the means and the desire to render it subservient to the interests of humanity, such persons will have my *unbought* assistance, to carry so benevolent a design into execution: If they should be disposed, to extend their humane assistance to the afflicted poor, either by introducing electrical practice into Dispensaries, or by forming an institution for that purpose—my aid shall not be wanting. To such an undertaking, either in Town or Country, I shall most *heartily* afford my assistance, in giving every necessary direction, for the proper administration of the electrical remedies. The various Institutions established in this Metropolis, for the relief of the poor and the cure of the diseased, is consolatory proof, that the want of *charitable feeling*, cannot be ranked among the *vices* of the age, and surely never can that feeling be enlisted in a better cause, than in carrying such a plan as is here suggested into effect.

As Electricity and Galvanism are so closely connected with the animal functions of health, and as they have so much influence in many diseases, it is highly probable that in the progress of knowledge, they will be found of still more importance, not only in Physiology, but also in the treatment of disorders to which they have not been yet applied—and I cannot but flatter myself, that some *useful improvements* will result to *medical science*, and benefits to *humanity* from the *diligent prosecution* of the subject which I have attempted to illustrate. I should hail with *rapture* the *dawn of that happy day*, beautifully described by a modern writer of great talent and philanthrophy—'When Learning shall be *greatly increased* and the useful Sciences be *fully understood*—when Professions shall be pursued for the *benefit of mankind*—and ELECTRICITY arrive at *that* standard of perfection' '*When the tempest shall loose all its force*, and the LIGHTENING ALL ITS TERRORS.'

OBSERVATIONS ON *GALVANISM, &c.*

PRIOR to my commencing the writing of this Volume, I had intended to give a brief elucidation of Galvanism, as the most important branch in the science of Electricity; but the present work having swelled to a size much beyond my original design, does not now allow me space, in what is thought to be a convenient form of publication, to do any thing like justice, to so interesting a subject. I have, therefore, thought it better to reserve the medical powers of Galvanic agency, for a separate work, in which I shall endeavour to develope its character, and illustrate its efficacy, in a diversified class of the very *worst* of human maladies. When this task is accomplished, I shall have the satisfaction to know, that I have done my utmost to call the attention of the faculty to salutary and efficient remedies, at present but *little* understood, and

less countenanced—and to have afforded to the afflicted *fresh* grounds of hope for recovery, from *even* many diseases, *now* deemed *hopeless*. The writers on Galvanism, have been very far from successful, in displaying its extraordinary powers to advantage—and as to those recent experiments on dead bodies, they have only exhibited the *folly* of those who made them, and have increased the prejudices of the weak and timid against a remedy, which when judiciously applied, would *more* than any other, stay the ravages of disease.

The plan I mean to pursue in the discussion of this subject, is to give a concise history of the discovery of GALVANI, and its subsequent progress towards its present state of improvement—to notice its philosophical powers, as applied to various useful purposes—to point out its medical efficacy in those diseases to which it has not been heretofore applied; and lastly, to state the uses I have made of its powers in disorders of the *vital* organs, and to illustrate

the success attending that practice, by numerous remarkable cases, the truth of which will be attested by the most unquestionable testimony. Many of the patients that will be referred to, reside *in* and *near* the Metropolis, and their cures are of so recent a date, that they have all occurred within the last three years. When I first discovered the power of *Galvanism*, in *indigestion*, *torpor* of the *liver*, and *constipation*, it appeared to me of *so* much importance, that it deserved to be marked as a new and happy era, in medical history. I hailed with delight a discovery, which promised to supply an *efficient substitute* for *mercury*, which I may safely venture to affirm, has done more mischief to mankind, than any other article in the *materia medica*. That Herculean remedy, the great stay and support of ordinary practice, has been from its injudicious exhibition, productive of more cases of *torpid liver*, *nervous debility*, and *decayed teeth*, than any other, or all other mineral poisons. In proof of the truth of this remark, I need only advert to the

amazing increase of Dentists, most of whom are in *full* practice, and realizing large fortunes. To be *toothless*, however, is but a *trifling* misfortune when compared with *many other* sufferings, which *calomel* and the *blue pill* have entailed on the human race.

* If other errors in medical practice can be said to have 'slain their thousands, *calomel has slain its tens of thousands.*' If the pernicious and destructive use of mercurial preparations can be superseded by the genial influence of a *natural* excitant, what devastation of constitutional vigour might not be prevented? This great desideratum, I feel confident in asserting, *has been* obtained; for I have had the sincere satisfaction to find *by experience*, that, in a variety of cases, in which mercury had

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* The following Observations are extracted from the first Edition of my Remarks on Galvanism---Published in June 1818---Subsequent Experience of the Efficacy of Galvanism has fully confirmed the opinion I then advanced.

been used in vain, the Galvanic treatment has completely succeeded. I have tried its effects not only in ASTHMA, but in *Dyspepsia*, *Chronic Hepatitis*, and *Constipation* with *complete success*. Several patients who had laboured under the former complaint more than twenty years, were relieved by the first operation, and cured *within a few weeks*. But in *Dyspepsia* the curative powers of Galvanism have been *so astonishing*, as even to *surpass* my *own* expectation. Numerous cases of Dyspepsia, combined with the most distressing symptoms—*with palsy*, *hypocondria*, *vertigo*, *deafness*, *impaired vision*, and a train of *other* afflicting maladies, have been cured in a short time. I therefore feel justified in asserting that the whole Materia Medica may be searched in vain to find *such a Panacea* as the *Galvanic influence*, in *torpor* of the *stomach*, *liver*, and *bowels*.

If so important a benefit can be obtained by so harmless a *natural stimulus* as Galvanism, which so far from exciting

any painful feeling, when properly directed, produces only a kindly genial glow in the region of the stomach, liver, and bowels—how preferable must such a remedy prove to *any* mercurial preparations, which seldom fail to *sap the foundation of the most robust constitution, to hurry on premature old age*, and not *unfrequently produce sudden death.* On this part of the subject, let the following opinion of Dr. Trotter be carefully perused, whom for scientific views, for profound skill, and vast experience, is not excelled by *any Physician* of modern times.

Dr. Trotter ON THE NERVOUS TEMPERAMENT states it as his *decided* opinion, that 'Mercury is the most *dangerous* of all frequent purges, it sooner exhausts the *irritability* and *vital* power of the intestines, than any other metallic oxide except Arsenic—it never fails in the end to *add* to the disease—*volumes* have been written on diseases supposed to have originated from the use of mercury in Lues venerea—yet

strange to relate, its *common consequences*; *Dyspeptic and nervous affections*, are scarcely mentioned. I firmly believe all the derangements which it occasions in the body, are *small* when compared with the *injury done to the nervous system and digestive powers*—yet some Physicians and Surgeons fly, even in *common cases* to one of its most dangerous preparations *hydrar. mur.* and seem to overlook its *ultimate effects* on the constitution. It has often been my lot to witness these effects in the practice of others, for of *fifty thousand cases* of Lues venerea which I have attended, I am convinced *not one* of the number required this acrid mercurial—Hœmoptisis ending in Phthisis was a *frequent* sequel to this treatment.—He further observes—' that in what are termed bilious, liver, and stomach complaints—if *much nervous predisposition exists*, mercury must do a *great deal of harm*, and *add* to the mischief, for this mineral after long use, besides *exhausting* the *nervous energy*, is known to affect *the bones, and render them friable.* A poison so subtile

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and active, thus consumes the vigour of the body, and brings on *premature* senility. These hideous effects are most probably produced by the mercurial oxide first *depraving the digestive powers*, preventing *assimilation* of the *chyle* and vitiating sanguification.'—Such are the distressing and *destructive* effects ascribed to mercury by a writer, who had the best of all possible opportunities of forming a correct opinion on the subject, from the high official situation he long held of *Physician to the Fleet*. This view of a matter of such vital importance to the health, happiness and life of man is by no means *solely* sustained by the authority of Dr. Trotter great as that authority unquestionably deserves to be held. It is also the opinion of the most eminent of the faculty, that many of the disorders incident to the human frame, originate in the deranged state of the *stomach and bowels*. Hence their first prescriptions are generally designed to clear the *prima via*, and excite their powers to healthful action. In this just view then

of medical science, what can be more safe and effectual than the employment of an agent which *instantly* grapples with disease at its *source*, and the operation of which is even agreeable to the feelings.

The benefits which medical Electricity and *particularly* Galvanism, are adapted to confer on the afflicted, cannot long remain a matter of doubt and scepticism with *any* description of persons. They will by their power and efficacy, soon speak in a language not to be misunderstood, and growing confidence will banish stubborn incredulity.

Much as I detest empirical and desperate remedies, I am scarcely less averse to those which are *inefficient*, because their very *neutrality* gives a *truce* to the *inroads* of disease, before a barrier can be raised to oppose the *ruin* of the constitution. I am therefore in candour *bound* to state,

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* These remarks are extracted from my work on the *powers* and *medical uses* of the AIR-PUMP VAPOUR-BATH, published September, 1819.

that prior to the first edition of my 'Observations on the Air-Pump Vapour-Bath, Factitious Airs, &c.' I met with some works on the utility of Oxygen and other Gasses, as efficient medical agents in the cure of various diseases, and those too which came more immediately within my line of practice. These philosophical remedies being strongly recommended by high authorities, I determined to make a fair trial of their efficacy, and with that view provided myself with every necessary apparatus for the purpose. I had, however, very soon after, the mortification to find from the statement of the patients, who came to consult me, and who had for a considerable time inhaled the Oxygen Gass, under the direction of those who were fully competent to judge of its applicability, that they had derived *no* benefit whatever from its use. On the whole, after repeated trials, of the Medicinal Airs, and in cases too in which they were most likely to prove efficacious, I lament to say that the experiments *wholly* disappointed my expectation.

Of the judgment of those philosophical and philanthropic Physicians who first introduced the Medical Gasses, and still maintain their utility, I would in any doubtful matter speak with great deference; but I regret to say that I have in fourteen months past, seen only one *single instance* in which the vital air used *alone* has afforded relief, but in *none* permanent benefit. I have indeed both heard and read of many cures which have been ascribed to the Medical Gasses, but on making the *strictest* enquiry, I am now warranted in asserting, that the most *efficient medicines* were administered to the patients in conjunction with the Vital Air—and thus, the *merit* of cures performed by the *skill* of the Physician with the aid of *ordinary* remedies, has been *solely attributed* to a mere doubtful auxiliary.

Under these impressions, it is impossible, that *I could honestly recommend* the Factitious Airs as an *efficient* remedy. If, however, any of my patients have still a predilection in their favour, I am willing to

make further trials of them, as an auxiliary to aid the means I employ,—they may procure these Gasses in their purest state at a reasonable price, from the *Medical Hall*, Piccadilly:—those who cannot afford to purchase them, may receive instructions from me for preparing them by a simple process, with very little trouble, and at a trifling expense.

I am well persuaded, that even in particular cases, where *vital air* may have been in any measure useful, the invalids would have derived much greater benefit from breathing the *country air*, with the additional advantages of change of place, of new scenes of amusement, and the fillip imparted to the spirits, by the exercise encountered in the journey.

M. LA BEAUME,

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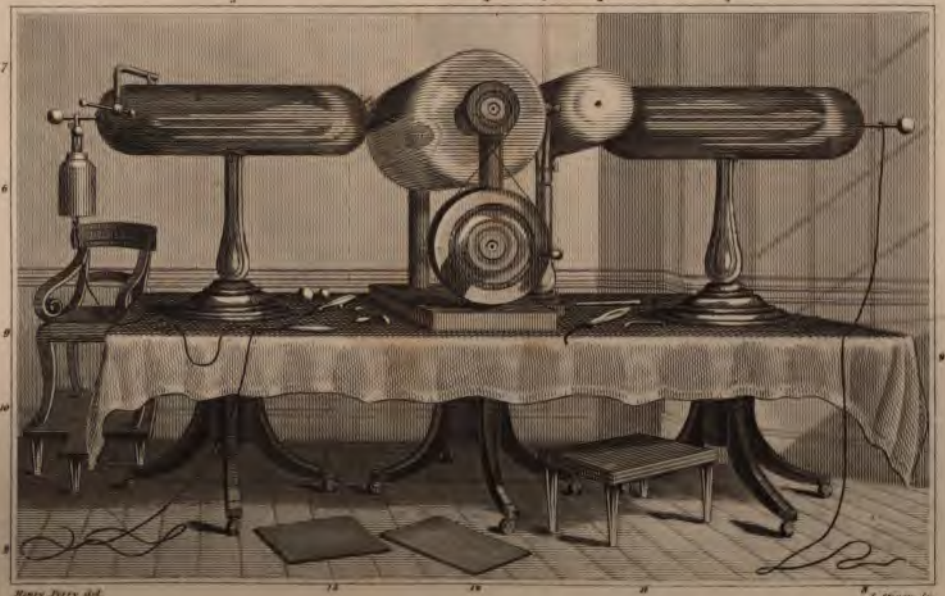
The Electrical Machine & Apparatus.



Henry Perry del. J. Haven fe.

Published by Wm. & Rob. Lion, Fulwood.

Explanation of the Plate, representing the ELECTRICAL MACHINE *and* APPARATUS.

No. 1. In the centre of the Drawing, is the Glass Cylinder.

2. The Cushion, or Rubber, in contact with the glass, and the silk which covers one half of the Cylinder.

3. A Negative Conductor affixed to the cushion.

4. Additional Conductor to be used only for the administration of Negative Electricity, on the plan adopted in France.

5. Positive Conductor at the end of the Machine, on which are points to attract the electric fluid, and at the other end a brass wire, on which a Ball is screwed. The whole, it will be clearly seen, is supported by glass pillars and wooden stands. The two wheels, which are turned by the hand, require no explanation. But I must remark, that the upper and lower wheel, have three or four grooves, to admit the contraction and elongation of the Cat-gut, as it may be affected by heat or cold, or long protracted use. The stand of the Cylinder is fixed by screws on the table to render it firm. The circular stands of the Conductors being leaded underneath, and intended to be frequently moved, require no fastening.

6. The APPARATUS---A Leyden-jar, with a small coated tube, and two wires, to administer vibrations and shocks when necessary. The Bottle I use, I have so constructed, that no patient can possibly receive shocks, while those sold at the shops, being designed for both purposes, are from their erroneous construction, as well as from the inadvertance of the operator in not removing the long wire, liable to give very violent shocks, when vibrations only are intendedto be administered.

7. The glass Electrometer which is placed on the Conductor, with a wire passing through a woooden cap, which instead of being a plain wire to slide, is turned by a screw, so as to adjust with the greatest nicety the strength of the vibratory action.

8. A brass chain hanging down from the Bottle on the table, and another from the table to the ground, to the ends of which, the Directors are passed by a swivel. One end of the chain is intended occasionally to be hooked to the wire near the outer ball of the Electrometer, for giving vibrations, or passing the current of Electricity. Another chain is suspended from the Negative Conductor, to convey the electric fluid from the ground.

9. Electric chair and stand, the legs of which are glass to secure perfect insulation.

10. The Stand for the Machine and Apparatus, is here represented as supported on three claws, but a substantial frame, on any other construction, will answer equally well, if intended to be fixed to the floor.

11. Electric Foot-stool on glass legs.

12. Are two Metallic Plates for the feet of the patient, when a communication to the ground is necessary.

On the woollen cloth laid over the table, and under the Positive Conductor, are two Directors--the handles of which are long pieces of solid glass, with a brass wire proceeding from the caps, to which either the wooden and brass points, or wooden and brass balls near them, may be screwed. Under the Negative Conductor is another Director of a larger size, for imparting Negative Electricity, and for other purposes. The long glass tube, through which a wire is pointed at one end, and with a ball at the other, is for passing the Electric fluid into the Ear--the other curved for passing it through the throat in the direction of the internal Ear, in the eustachian tube.

RECEIPE FOR AMALGUM.

Pour into a wooden box well chalked, 6 oz. of Quicksilver--Put a half oz. of Bees Wax into an iron ladle with 2 oz. of pure Zink, and 1 oz. of pure Tin, then set it over a strong fire, till the metals are melted, then pour them into the box, over the Mercury, casting away the whole of the dross which may be attached to the ladle--When cold pound the whole in a mortar, till reduced to powder, and mix it well with Hog's Lard, and put the whole into a wooden box, covered with tallow, and when required for use, spread it on a piece of leather to be rubbed on the Cylinder.

If the pounded metal should be hard or coarse, sift it through a fine muslin, then mix it with lard as directed.

LIST

of the PRINCIPAL WRITERS *on* PHILOSOPHICAL ELECTRICITY.

Dr. William Gilbert's Treatise de Magnette, published 1600; *Robert Boyle's* Works *Otto Guericke*, on Natural Philosophy; *Sir Isaac Newton's* Works, 1784; *Hawksbee's* ditto, 1709; *Marq. Du Faye; Dr. Desagulier's* Course of Experimental Philosophy; *Dr. Watson's* Works, (the late Bishop of Landaff); *Benjamin Wilson's*, 1788; *Dr. Franklin's*, well known; *L'Abbe Nollet's* (French); *Canton; De Dutour's* Researches de la Matiere Electrique, Paris, 1740; *Signr. Beccaria; Æpinus's* Tentamen Theoriæ Electricitatis; *Symner*, 1759; *Cigna*, Turin; *Priestley's*, (well known); *Van Marum's* Treatise, Groningen, 1776; *Van Swinden; Ferguson; Cavallo; Lord Mahon*, (late

Lord Stanhope); *Wesley's* Natural Philosophy; *Wilkinson; Nairne; Cavendish,* Philo. Trans. Vol. 51.; *Singer; Becket; Dr Nooth; Henley,* Phil. Trans. Vol. 64; *Professor Musschenbrocke; Mons. Monser; Mons. Gralath; Rugier; A. W. Von Hauch; Lawson; Mons. Coulomb; Cuthbertson; Bennet; Volla; Eeles; Dr. Higgins; Professor Russel; De Luc; Morgan; Dr. Hutton; Kinnersley; Roynane; Orchard; Nicholson; Walsh; Brydone; Jalabert; Saussure; Jones's* Edition of *Adams's* Electricity; *Dr. Fothergill,* Philo. Trans. Vol. 69; *De Lean; Mauditty; Hallabert; Read; Swift;* &c.

Many of the *above,* as well as the *following named Authors,* have written on

MEDICAL ELECTRICITY.

Dr. Knox's Medical Commentaries; *Savage's* Testimonies; *Hunter's* Observations on Electri.; Surgeon *Freake's* Essay on Electri.; *Jacobus Hall,* Dissertatio Physico Medica in auguralis de Electricitate,

1771; *Robertson's* Dissertatio Medica in auguralis de Electricitate, and Operatione ejus in Morbus curandis, 1778; *Syms's* Dissertation on Fire, Philo. Trans. Vol. 57; *Dumbracke's* Observat. Curat. Midc.; *Wardrope's* Dissertatio de Paralysi; *Hall's* Dissert. de Electri. Phil Trans. Vol. 1, Part 2; *De Haen*, Vol. 1, Phil. Trans; *Priestley's* Recuil sur L'Ectricte Medical; *Dr. Duncan's* Observations; his *Medical Cases;* his *recommendation* of Electricity; *Maudit's* Memoire de la differentes Maniere d'administrer L'Ectricte; *Bonadtch's* Treatise on Electricity; *De Haen's* Ratio Medendi, Vol. 1.; *Deshaies'* Theses, 1749; *Zetzel's* Theses, 1753; London Medical Observ. Vol. 4.; *Hone's* Clinical Experiments; *Dr. Perceval's* Medical Commentaries, Vol. 7.; *Lovet's Electricity* made useful; *Wesley's* ditto; *Cavallo* on Medical Electri.; *Becket's* ditto; *Carpue's* Introduction to Electricity; *Birch's Treatise; Considerations* on ditto; *his letter* to *Adams* on ditto; *Lowndes's* on ditto, but now out of print.

ERRATA.

Page 10, *line* 6, *read* vivid flames *for* vivid of flames.
—— 51, — 15 *read* vice *for* visa.
—— 84, — 12, *read* physiology *for* phisiology.
——120, — 5, *read* dissuade *for* diswade.
——124, — 15, *read* too *for* two.
——137, — 14, *read* pediluvium *for* piediluvium.
——139, — 16, *read* was *for* were.
——160, — 16, *read* uniformly *for* uniformity.
——164, — 11, *read* were *for* was.
——175, — 6 *read* irritability *for* irratibility.
——204, — 12. *read* curvatures *for* curvitures.
——250, — 7, *dele* the.
——299, — 10, *read* dyspeptic *for* dyspetic
——351, — 9 *read* who *for* whom

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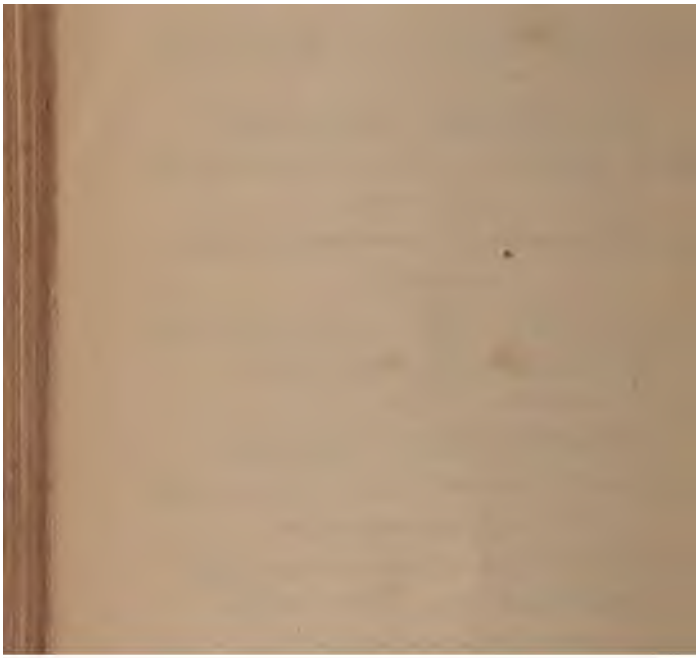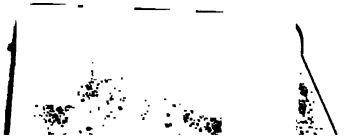
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